STEEL

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CONTENTS

February 29, 1932

THE WEEK IN STEEL 9

Ore Producers Puzzled by Outlook, Move Cautiously 11
Wage Cut Possible but Not Immediate 12
American Foundrymen's Convention Goes to Detroit 13
Financial News of Steel Industry 17

Industrial Men in the Day's News 14
Obituary 15
Mirrors of Motordom 16
Here and There in Industry 17

EDITORIAL—Michael Faraday—Pioneer in Alloy Steels 18
THE BUSINESS TREND 19

Open-Hearth Facilities Expanded—Part I 23
Blocks Provide Neutral Atmosphere for Hardening 26
Open Hearth Establishes Unusual Production Record 27
Double-Deck Elevators Save Floor Space in Skyscraper 28
New Data on Alloy Steels Brought Out by Research 30
Progress in Steelmaking 33
Scanning the Technology of Steel 34
New Equipment 36

MARKET REPORTS AND PRICES 39-55
CONSTRUCTION AND ENTERPRISE 58
NEW TRADE PUBLICATIONS 58
WHERE-TO-BUY DEPARTMENT 59
ADVERTISERS' INDEX 77

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An Outstanding Alloy Steel Manufacturer of the World

GOOD WILL BASED ON GOOD STEEL

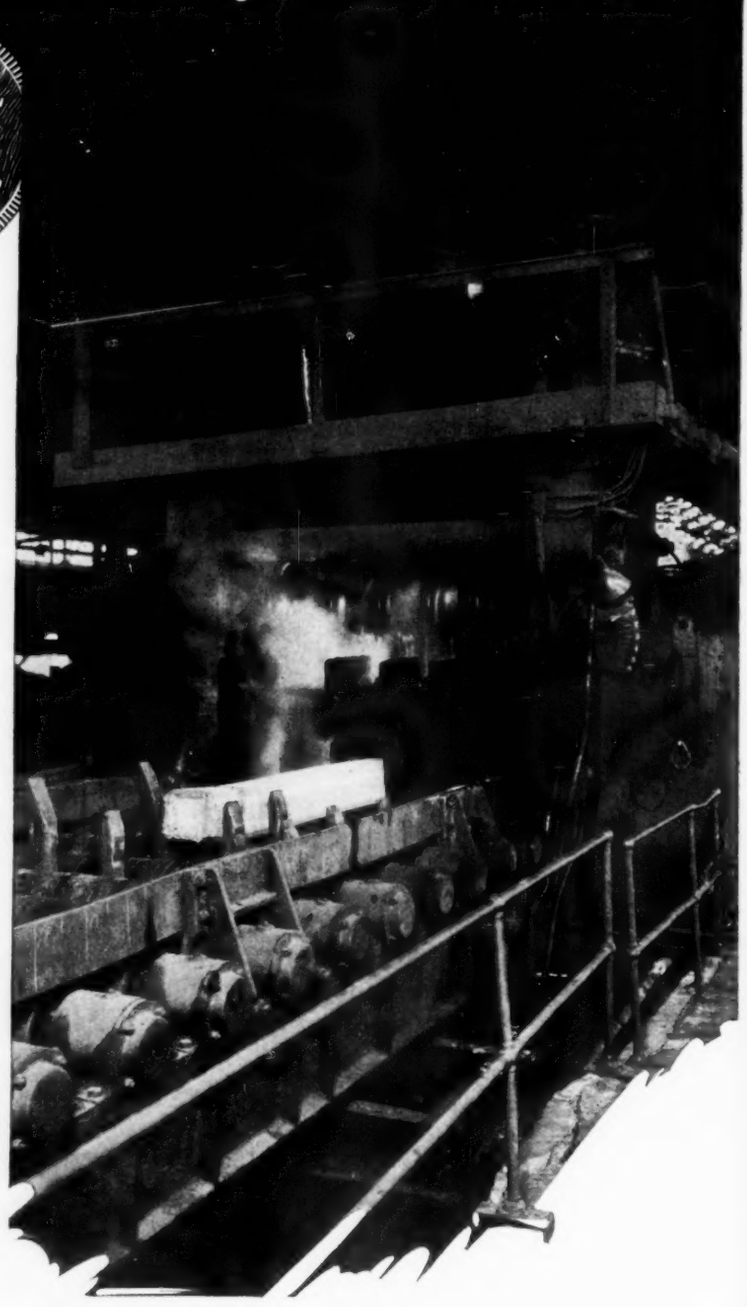
Complete modern manufacturing facilities

Next to the knowledge and experience of its executive technical personnel, the most important advantage possessed by The Timken Steel and Tube Company is its modern production equipment.

No matter how correct the specifications may be, good steel—steel that is true to grade and uniform in quality—cannot be made with out-of-date machinery and old-fashioned methods.

The capacity of the Timken steel plant is 30,000 tons a month. Every piece of equipment throughout the plant is thoroughly modern, and the best of its type, including electric and open-hearth furnaces; ingot handling equipment; blooming mills; re-heating furnaces; bar mills; merchant mills; seamless tube mills; hot and cold saws. All of the machinery is equipped with the most modern anti-friction bearings.

Thus good equipment contributes its full share to the verification of the Timken slogan, "Good Will Based On Good Steel."



TIMKEN

Electric Furnace and Open Hearth

ALLOY STEELS

THE TIMKEN STEEL AND TUBE COMPANY, CANTON, OHIO

Volume 90 Number 9

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

THERE was a time, not over 5 years ago, when steel eagerly awaited the advent of March. A 31-day month without a holiday, temperature neither too high nor too low for the most effective production, and railroads, builders and automobile manufacturers pressing for material for their spring programs, March then was a month of records. In that idyllic past, operating officials were even known to hold out attractive specifications late in February to put on the mills March 1—a process not entirely unlike hoarding . . . . March this year also is invested with hopes—hopes so modest that even a fractional gain in activity would satisfy, yet conceivably a sign that steel has crossed to the far side of the valley.

A Ford in the Way—Again

For one thing, not much longer will a $400 automobile block the economic highway, compelling the 2 billion dollar automobile and 4½ billion dollar steel industries to throttle down to a snail's pace, with the traffic of many collateral industries backing up behind them. Within a few days, Detroit believes (page 16), the new Ford four and eight will be shown—the prelude to production of at least 100,000 units for dealers' stocks plus whatever retail sales are conjured up. Since Ford a month ago confirmed reports of new models, the automobile industry has been paralyzed; soon it will know the worst, which may be a price war in which steel will suffer the usual fate of the bystander, and can chart its course accordingly.

Market Sunshine No Longer Artificial

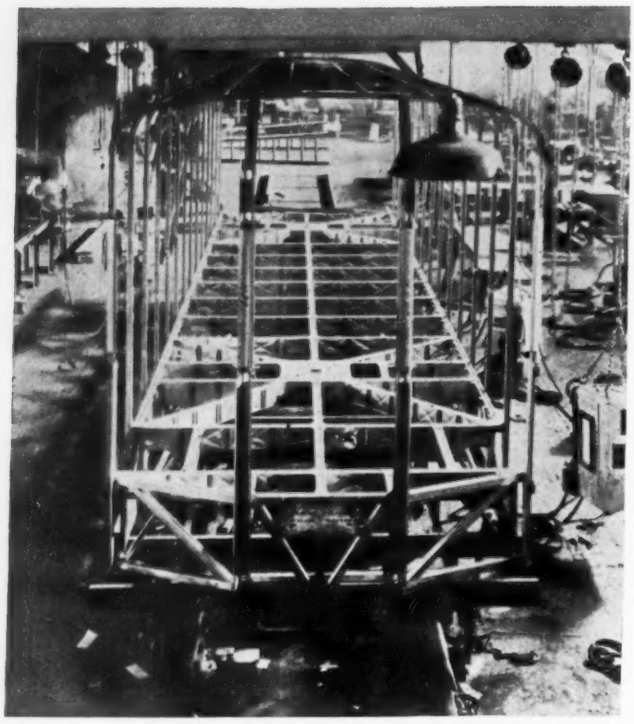
Hope and fact continue to commingle in the steel markets. Last week producers were pressed to maintain a 25 per cent operating rate (page 47). February output of pig iron may show a slight gain over January but ingots will do well to equal that month. Bookings by most steelmakers were lower in February. Yet there is a large measure of genuine sunshine. Unless all signs fail, more railroad, automobile and building steel will be shipped in March than since November (page 39). January having made a false start toward a seasonal rise, March may make amends.

Ford Ore Inquiry Like First Robin

A certain sign of spring is the approach of the Ford inquiry for iron ore (page 43), expected almost daily to open the buying season. . . . Producers of ore are at the mercy of blast furnaces, lower lake stocks being nearly 400,000 tons greater than a year ago with con-

Acme Photo

No splash makes a tame launching, but the crane deserves credit. The all-welded tug, 65 feet long, 62 tons displacement, is being "lifted" into the water at Boston navy yard



Assembling stainless steel, pneumatic-tired railroad car at Edward G. Budd Mfg. Co.'s Philadelphia plant. The car complete weighs only 13,500 pounds, or 337 pounds per passenger

sumption distressingly less (page 11). . . . Although a little steel is moving to the Far East (page 12), the Sino-Japanese war as yet is of little moment to the industry.

Need To Sell Prices to Buyers

Buying of steel for some months not having been influenced by price, producers continue to pursue a policy of stabilization, designed more to eliminate extreme concessions than effect advances. Last week, strip steel and bolts and nuts emerged from the stabilization ordeal which sheets and heavy finished steel had previously undergone (page 39). Producers are not unmindful, however, that anouncement of prices is one thing, cloaking them with confidence another . . . . Steel founders are being urged by their national organization (page 12) to do missionary work for more intelligent buying and selling of castings, to spread the gospel that curtailed operations have advanced labor costs more than raw materials have receded.

Just Remuneration Not Inflation

This movement to elevate prices enjoys the benison of a Chicago bank economist (page 12) who refuses to regard inflation—if higher prices be that—as a bogey. To restore prices, now 23 per cent below the average for the period 1865 to date, is only to recapture normalcy, he contends . . . . Washington, however, continues to prod industry with one hand while using a pulmotor in the other. The federal trade commission reports progress in its investigation of building material industry (page 13); a resolution before the house would put all anti-trust laws under the X-ray of the judiciary committee.

Steel Can Also Be Noiseless

In spite of the times and new competition, steel bores in and intrenches itself. Steel as well rubber can make a noiseless trolley car wheel (page 12), as an experiment at Detroit proves . . . . Nor is the new lightweight rubber-tired railway car assembled at Philadelphia (page 10) a total loss for steel, as the use of stainless in this connection is a new one . . . . Steel sheets have won over copper (page 12) as the material for the 1933 Michigan automobile license tags. . . . . Double-deck elevators in a 67-story New York skyscraper not only broaden the market for sheets (page 28) but also require 36 miles of hoisting rope, 7½ miles of counter rails, 690 miles of covered wire, 13 miles of conduit.

Bigger and Better Open Hearths

Open-hearth performance is constantly being improved, if the experience of an oil-fired furnace operated through three campaigns totaling 1746 heats is conclusive (page 27). Rebuilt after the second campaign and torn down after the third, the furnace averaged an oil consumption of only 27.3 gallons per ton of steel produced. . . . Twenty-one new open-hearth furnaces at the Gary and South Chicago works of the Illinois Steel Co. (page 23) give this interest 95 furnaces, with an annual capacity of 9,230,000 tons. . . . An open-hearth furnace operating on cold metal makes 120-ton heats in less than 11 hours from tap to tap (page 33), using about 4,000,000 b.t.u. per ton.

Iron-Aluminum Alloy Resists Rust

Hardening of high-speed steel requires a neutral furnace atmosphere to prevent scaling, carburization or decarburization. An eastern manufacturer has developed (page 26) a special type of molded block of carbonaceous material into which parts are placed for hardening, the block being put in a silicon carbide muffle and then into the hardening furnace. . . . . At the recent A.I.M.M.E. meeting in New York it was claimed (page 30) that an iron alloy with 6 per cent aluminum is only slightly inferior to chrome-nickel steel in point of oxidation resistance.

Ore Producers, Puzzled by Outlook, Move Cautiously

LEADING Lake Superior iron ore shippers do not recall a time when the outlook for an approaching season was so obscured as at present. They are hopeful shipments this year will exceed the 23,500,000 gross tons of 1931, but they have nothing tangible on which to base expectations.

Production was curtailed so sharply last year that stocks at lower lake ports and furnaces were reduced to normal by fall. Shippers then were confident the new year would bring enlarged demands and more activity at the mines. Stocks at lower lake ports and furnaces Jan. 1 were 1,000,000 tons less than on that date last year. By Feb. 1, however, the order was reversed, due to diminishing consumption, and stocks were 273,375 tons more than on Feb. 1, 1931.

Stocks Feb. 1 amounted to 36,893,313 tons, and it is evident that at the January rate of consumption the industry could operate 15 months—to May 1, 1933—without any fresh shipments from the Lake Superior district, and still have on hand that day 19,689,000 tons, nearly the normal tonnage with which to start a season.

Likely To Remain High

Stocks for some time will remain higher than they were in the early months last year, and they were then so large as to cause alarm. On May 1, 1931, stocks amounted to 28,722,326 tons, nearly 9,000,000 tons above normal, at the beginning of the shipping season. It is unlikely that consumption in February, March and April will bring stocks below 30,000,000 tons by May 1. This presents a problem to the shippers which can be met only by delaying and slowing operations until consumption definitely points upward.

Consumption must increase substantially before July or August, or shipments again will be reduced, for the third consecutive season. So far there has been only one instance in the history of the Lake Superior iron ore industry when tonnage dropped three successive years.

The two trend lines which mean more than any others to iron ore producers, in their efforts to gage future requirements, are depicted in the accompanying chart. The top line represents the amount of iron ore at lower lake ports and furnaces —the available stocks—and the lower, the daily rate of pig iron production, indicating how iron ore is being consumed.

The stock line usually runs in a rhythmical cycle, the peak generally in December, after the close of shipments, and the valley in June, after five months of consumption, and just before the resumption of heavy shipments. Last year, it will be noted the stocks in mid-year were far above normal, and at the end of the season, below, leading producers to believe they had cleared the way for an active year.

The low level and downward trend of pig iron production, however, has puzzled them. They are as reluctant to venture a guess as to what this year's shipments will amount to, as they are to predict pig iron production.

Instead of the conferences and negotiations which usually take place at this time, with consumers and producers preparing for the season just ahead, a number of large users have asked to be relieved of the provisions in their long-term contracts binding them to take certain tonnages annually, on the ground that they have more ore than they can use. This is the first time in the memory of the producers when so many consumers have found it impracticable to take minimum contract requirements, and how the arrangements will be adjusted is not yet clear.

Under these circumstances the opinion prevails that nothing can be gained, and much harm could be caused, by a reduction in ore prices this year. The majority of mine operators report they lost money or just "broke even" on last year's operations. There does not seem to be much pressure for lower prices from the consumers who realize that this probably would inaugurate another cycle of reductions throughout the iron and steel industry.

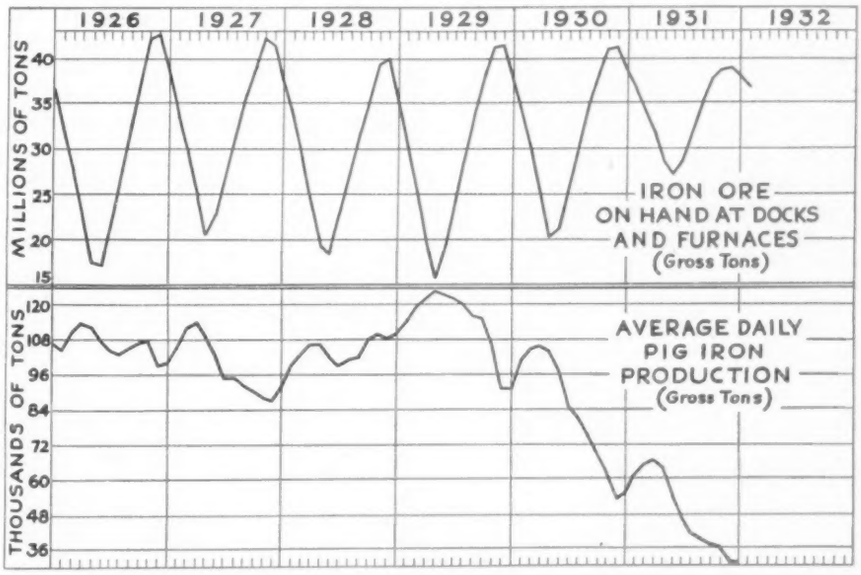
U. S. Income 71 Billions

TOTAL national income of the United States in 1930 is estimated at 71 billions by the National Industrial Conference board, New York. In terms of current dollars, this was a shrinkage of 16.4 per cent from 1929 or 4.6 per cent under 1920. In terms of the 1913 dollar, 1930 income was 13.1 per cent lower than in 1929.

In 1920 the average income of every person having a gainful occupation was $1778, or in terms of the 1913 dollar, $898. In 1930 the average income was $1452, or in terms of the 1913 dollar, $941.

Adopts Educational Program

A definite program of educational work, to be announced later, was outlined by the publicity and educa-



TWO LINES WHICH GOVERN AN INDUSTRY: The top represents stocks of Lake Superior iron ore at lower lake ports and furnaces, month by month; the bottom, daily rate of pig iron production in the corresponding months. These factors are watched more closely than any others by producers in estimating in advance 12 months' requirements of iron ore. With stocks again above normal and trend of consumption uncertain, they are confronted with a difficult problem, which they will meet by moving cautiously, until the pig iron trend line turns upward

tional committee of the Materials Handling institute, New York, at a recent meeting in Detroit. John R. Booher, Cleveland Tramrail Webb Co., Cleveland, is chairman of the committee. Sixty-six companies now are members of the institute.

Wage Cut Possible But Not Immediate

NEW YORK—Recent reports of an impending wage and salary cut by the United States Steel Corp. lack confirmation here. Growing belief is that while such action is not improbable, it is not at least in immediate prospect. Much depends upon business the next few weeks.

Steel corporation directors at the last quarterly meeting, in January, indicated a further reduction in the rate on common dividends, now at $2 a year, should business fail to improve, and many are inclined to apply the same rule to salaries and wages, in varying degree.

Hope is expressed that present efforts of the steel industry to stabilize prices may prove instrumental in staving off further cuts, but in this case also much depends upon the trend of business. Regardless of the dire necessity for such stabilization, as clearly exists at present, producers are handicapped where tonnage continues to decline. Fortunately, immediate prospects are regarded as best in some time.

The only rate reduction by the Steel corporation thus far in the depression was effective Oct. 1, 1931, amounting to approximately 10 per cent. Salary adjustments also were made and the movement was general throughout the industry.

The wage reduction by the leading interest was the first since 1921, when three revisions were made within little more than three months. However, the stagger system of employment now in effect has made deep inroads in the pay envelope of the individual worker. Hence, circumstances now and in 1921 are not entirely comparable.

Restoring Price Levels to Normal Not Inflation

Chicago—Recuperative measures by the government and the fact that commodity prices now are 23 per cent below the average of the past 67 years, or since the close of the Civil war, are a guarantee against inflation, declares Franklyn Hobbs, Central Republic Bank & Trust Co.

"Any so-called inflationary move to raise prices 23 per cent would not, in fact, be any inflation at all," says Mr. Hobbs. "If the stage can be set so that prices drift upward to the normal, or average, then business will be on a more solid footing than at present. It will one day be realized that the dangers of deflation are fully as grave as the dangers of inflation. Prices below the line make profitable operation difficult and any moral and legal means used to restore the equilibrium of prices is justified.

"No doubt a period of price inflation will follow the present depression, but it will not follow it this year or next, without the assistance of a great international conflict. The fear complex has magnified this depression and the same complex now warns against inflation."

Intelligent Selling, Buying Will End Depression

A STRENGTHENING of prices all along the line will do more for business right now than almost any other thing," declares the Steel Founders' Society of America Inc., New York, urging an end to destructive buying.

A relaxation of pressure by purchasing agents for unwarranted price reduction and more intelligent selling are cited as two essentials. Sharp purchasing in many instances is forcing business, labor and capital deeper into the mire of depression, it is claimed.

While pig iron, scrap, salaries and labor cost steel founders less, curtailed operations have advanced the labor cost per ton of castings to a point more than offsetting these savings. Sand, emery wheels, electric power, telephone and telegraph charges and gas are practically unchanged and freights are actually higher, the Steel Founders assert.

Legge Sees Farm Recovery

Chicago—Alexander Legge, president, International Harvester Co., believes farm prices will improve this year and that agriculture will stem the tide of depression and inspire a return to prosperity. Last year International Harvester made a small profit on its foreign business, none on its domestic. Its net profit of $1,346,537 equaled $1.63 a preferred share.

Report Some War Business

New York—Producers of finished steel state they cannot detect the influence of the Sino-Japanese disturbance at Shanghai in their orders, but reports that both China and Japan are quietly seeking to place munitions and supplies are persistent.

One manufacturer in Illinois and two in Wisconsin are reported at work on tanks and other war material. It is understood that assiduous efforts have been made by both nations to obtain anti-aircraft guns, gas masks and similar supplies.

What's Happening In Business World

MICHIGAN, home of iron ore and copper mines and torn between loyalty to each, has decided to fabricate its 1933 automobile license tags from No. 24 gage steel sheets. Economy won.

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Timken-Detroit Axle Co., Firestone Tire & Rubber Co. and the Detroit Department of Street Railways have jointly manufactured a steel railway wheel with a core of live rubber to eliminate noise in operation.

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What heretofore has been known at the Radio City-Metropolitan Square development of the Rockefeller interests in New York, requiring 125,000 tons of steel and being the largest structural contract ever awarded in the United States, has been officially designated the Rockefeller Center.

Revision of Scrap Grades Scheduled for March 9

Washington—During the annual convention of the Institute of Scrap Iron and Steel Inc. at Washington, March 8-10, the department of commerce will consider a revision of scrap classifications. The revision conference will begin March 9, and the following associations have been invited to attend: National Association of Purchasing Agents, Institute of Scrap Iron and Steel, American Railway association, American Iron and Steel institute, Gray Iron institute, and Steel Founders' Society of America. In addition companies which have accepted the uniform scrap classification also have been invited to attend.

Bar Iron Mill Wage Rates Are Unchanged

Wage rates in bar iron mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be unchanged in March

and April from the levels that have prevailed for the past four months. The average sales price of bar iron in January and February remained at 1.65c. Puddlers will continue to receive $10.05 per ton. Following are prices, on which wage rates are based:

	1932	1931	1930
Jan.-Feb.	1.65c	1.70c	1.95c
March-April		1.70c	1.90c
May-June		1.70c	1.90c
July-Aug.		1.70c	1.80c
Sept.-Oct.		1.65c	1.80c
Nov.-Dec.		1.65c	1.70c
Yearly average		1.66c	1.84c

The Business Week In Washington

HOUSE rules committee Feb. 26 adopted a special rule bringing the bill authorizing $120,000,000 for highway construction as an emergency relief measure up for action soon. The house Feb. 26 also adopted the conference report on the Glass-Steagall bill, broadening the eligibility provisions of the federal reserve system, and similar action is expected speedily in the senate.

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Representative Sumners, of Texas, has introduced a resolution authorizing the house judiciary committee to investigate antitrust laws.

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All iron ore except chromium ore and iron and steel scrap are on the free list of the proposed British tariff bill expected to become effective March 1. Most rates are 10 per cent.

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A bill by Representative Evans, of Montana, puts a duty of 5 cents a pound on the copper content on all imports of copper ores and concentrates.

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Federal trade commission reports progress on its investigation of the building material industry, seeking particularly to discover if there were any price-fixing agreements on government contracts.

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A treasury drawback granted in 1927 to Lukens Steel Co., Coatesville, Pa., for the manufacture of steel plates with the use of various imported materials has been extended to include pig nickel.

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Representative Britten, of Illinois, has introduced a bill which, through co-operation of the states, would make Saturday a legal holiday. The effect would be to introduce the 5-day week and find employment for 4,000,000 workers necessary for indispensable Saturday work.

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Interstate commerce commission has upheld Ohio intrastate freight rates on raw dolomite and fluxing stone, except from Marble Cliff to Mingo Junction and Steubenville. Rates from Marble Cliff and West Columbus, O., to Weirton and Wheeling, W. Va., are held reasonable.

Canada Made More Steel, Less Iron in January

Toronto, Ont.—Output of steel ingots and direct steel castings in Canada in January at 25,060 gross tons showed an increase of 20 per cent over the 20,969 tons of December. In January, 1931, production was 57,598 tons.

Canadian production of pig iron in January was 10,305 gross tons, compared with 13,862 tons in December and 35,592 tons in January, 1931. The January total was entirely foundry iron.

Ferroalloy output in January was 1823 tons, against 1814 tons in December and 4467 tons in January, 1931.

Birmingham Idle To Garden

Birmingham, Ala.—Many industrial companies in this district are supplying plowed ground free and encouraging their workmen to raise vegetables.

Navy Will Buy Ingots

Boston — Navy department closes March 8 on 60,000 pounds of aluminum-alloy ingots for Portsmouth, N. H., navy yard.

A.F.A. Convention Goes to Detroit

BOARD of directors of the American Foundrymen's association announces that the next annual convention of the association will be held at the Hotel Statler, Detroit, May 3, 4 and 5, 1932.

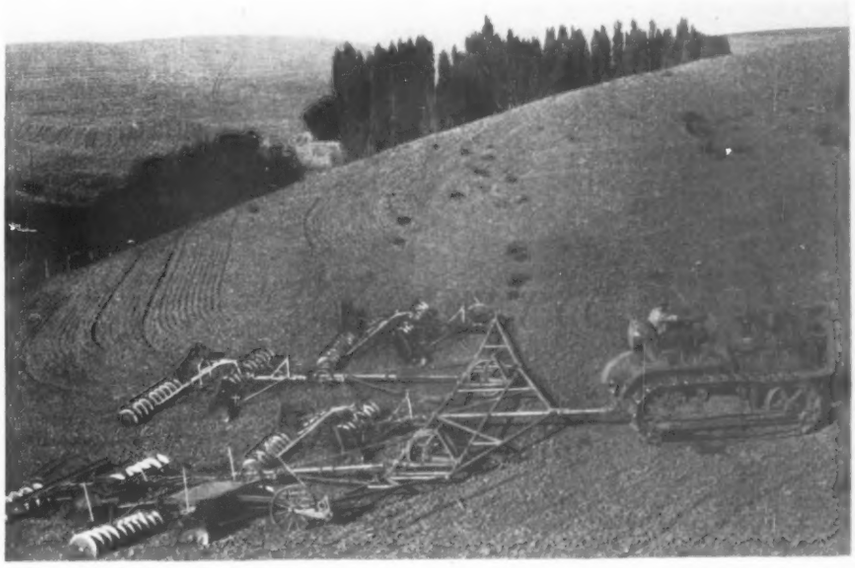
This announcement supersedes previous information that the annual convention and exposition would be held in Philadelphia on the same dates.

The meeting at Detroit will be similar in character to the very successful technical meetings held at the Edgewater Beach hotel in Chicago in 1927, and will be the second annual meeting since 1905 held without a commercial exhibit being staged at the same time.

It is expected that all allied associations that contemplated meeting in Philadelphia will join with the A.F.A. in Detroit, reserving as does the American Foundrymen's association, the splendid facilities offered by the new convention hall in Philadelphia for the spring of 1933.

Receiver for Unit Corp.

Milwaukee—Unit Corp., manufacturer of forgings and power shovels, has been placed in charge of Seton Gray and M. A. Goldsmith as receivers. Immediate reorganization is planned.

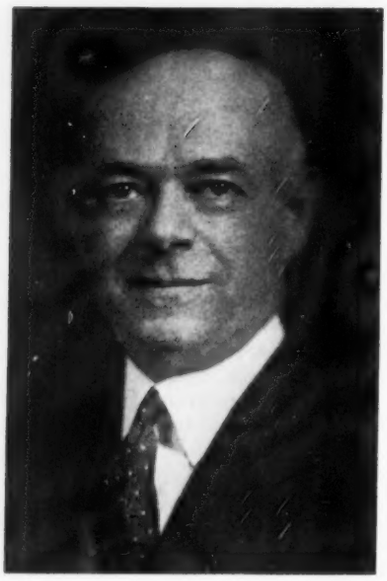


Photo, Caterpillar Tractor Co.

STEEL, POWER AND THE FARMER: This tractor working on the hills of the Palouse, near Pullman, Wash. is pulling five 10-foot double disks. The hitch which permits the disks to conform closely to the ground is made of steel castings, medium carbon steel seamless tubing, with joints electrically welded. The wheels have roller bearings. Census reports show the number of tractors on farms in this country increased from 246,083 in 1920 to 852,989 in 1929

Industrial Men in the Day's News

Henry H. Peck, Manager of Sales, Lukenweld Inc., Coatesville, Pa.



SINCE 1903 he has been identified with the American Steel & Wire, Illinois Steel, Scullin Steel, Lorain Steel and Standard Steel Works Cos.

DURING the World war he served as an ambulancier with the French army; later with the American forces.

IN his 29 years in the steel industry he has been engaged principally in the sale of steel castings.

HENRY H. PECK, who was noted in STEEL for Jan. 11 as having been appointed manager of sales for Lukenweld Inc., Coatesville, Pa., a division of Lukens Steel Co., Coatesville, dates his affiliation with the steel industry from 1903.

Born in New Haven, Conn., he entered, at an early age, the employ of the National Wire Corp., now the Fairmont works of American Steel & Wire Co., in 1903 as a timekeeper. Since that time Mr. Peck has served in various capacities in the steel industry, being principally engaged in the sale of steel castings in various districts of the country.

He was attached to the staff of W. P. Gleason, general superintendent of the Gary, Ind., works of the Illinois Steel Co., Chicago, in 1909 and 1910. In 1911 he was appointed western sales manager at Seattle for the Scullin Steel Co., St. Louis. Until 1917, when he went to France as an ambulancier with the French army, he managed sales in the entire west and parts of Canada and Mexico for the Scullin company.

During the World war Mr. Peck also served as an ordnance officer in the American army, was promoted to a captaincy, and returned to the United States in 1919. Since 1919 he has served as sales agent for the Lorain Steel Co., Johnstown, Pa., with headquarters in Pittsburgh and Johnstown, and recently as sales agent in New York for Treadwell Engineering Co., Easton, Pa., and the Standard Steel Works Co., Burnham, Pa.

His clubs are: Machinery Club of New York; Association of American Volunteers with the French Army, 1914-1917; Ypres Service league (American branch); and the Tank Corps association, London, Eng.

CHARLES N. STODDARD has been elected president and general manager, Greenfield Tap & Die Corp., Greenfield, Mass. He succeeds Francis G. Echols, who has retired after having been connected with the small-tool business for over 40 years. Mr. Stoddard is a Greenfield attorney and a director of several New England financial and industrial interests, but he will now devote his exclusive time to his new office. He has served as general counsel and director of the Greenfield Tap company since its inception and has been vice president for the past year.

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Thomas W. Pangborn, president, Pangborn Corp., Hagerstown, Md., recently was elected chairman of the governing committee and executive vice president of the Hagerstown Bank & Trust Co. Mr. Pangborn also is a director of the Equitable Trust Co., Maryland-Virginia Joint Stock Land Bank and the Liberty Mutual Insurance Co., all of Baltimore.

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Charles B. King, affiliated for the past 37 years with Marion Steam Shovel Co., Marion, O., has resigned his position as vice president of the company. He is president of the Ohio Manufacturers' association.

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Harold B. Ressler, recently elected a vice president at Chicago of Joseph T. Ryerson & Son Inc., Chicago, has been placed in management of the St. Louis plant of the Ryerson company. Mr. Ressler was formerly manager at St. Louis for 15 years and will be in regular contact with the St. Louis organization through regular trips to that territory.

R. B. Wilson, manager of sales at St. Louis, will be senior resident executive. He has been with the St. Louis organization for more than 17 years.

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Arthur H. Oberndorfer, advertising manager, Sivyer Steel Casting Co., Milwaukee, for the past 13 years, has resigned, effective March 1.

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William H. Scheer, formerly in the Cincinnati office of Ex-Cell-O Aircraft & Tool Corp., Detroit, has been transferred to the Chicago office.

Frank E. Strother, formerly in charge of the Cleveland territory for the ExCell-O company, has been transferred to the Detroit sales office.

H. E. Henry, who formerly worked out of the Cleveland office, has been given charge of that district, his new address being 1240 Bender aveue, East Cleveland, O.

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H. E. White, of the Lava Crucible

Co., Pittsburgh, has been appointed secretary of the refractories division of the ceramic society for the same period.

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J. L. Hench, vice president, Mid-West Forging Co., Chicago, has been elected a vice president and director of the Achuff Railway Supply Co., St. Louis.

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W. V. Knowles, Titanium Alloy Mfg. Co., Cleveland, has been named chairman of the enamel division of the American Ceramic society for the ensuing year.

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Thomas A. Elder, secretary of the Electric Steel Castings Co., Indianapolis, has been elected second vice president of the Associated Employers of Indianapolis.

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A. E. Ballin, formerly vice president of McIntosh & Seymour Corp., Auburn, N. Y., has been appointed vice president in charge of sales and engineering for the Nordberg Mfg. Co., Milwaukee, effective March 1.

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J. S. Watson, vice president and general manager of the Indianapolis division of the Link-Belt Co., Chicago, was elected a director for three years to succeed George P. Torrence, who recently was transferred to Chicago.

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Harold Smith, vice president of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been elected a director of the Radio Corp. of America, New York, to succeed the late H. P. Davis.

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Edward N. Hurley Jr., president, Hurley Machine Co., Chicago, has been elected president of the American Washing Machine Manufacturers' association, Chicago, for a third term.

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Irving M. Smith, formerly with the sales department, Alan Wood Steel Co., Conshohocken, Pa., has become associated with the general sales department of the Central Iron & Steel Co., Harrisburg, Pa., specializing in the sale of floor plate.

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Nelson W. Pickering was re-elected president of the Farrell-Birmingham Co. Inc., Ansonia, Conn., at the annual stockholders meeting Feb. 18. Franklin Farrell Jr., was re-elected chairman of the board, and David R. Bowen, Carl Hitchcock, Franklin R. Hoadley and Armin G. Kesseler vice presidents. All directors and other officers also were re-elected.

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Francis J. Yawman has been elected president of the Yawman & Erbe Mfg. Co., Rochester, N. Y., succeeding the late Gustav Erbe. His father, the late Philip H. Yawman, was co-founder of the company and formerly its president.

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R. Wirth has been appointed to succeed A. H. Tischer as district representative in the Indiana territory of Foote Bros. Gear & Machine Co., Chicago. Mr. Wirth's headquarters have been established in the Merchants' Bank building, Indianapilis.

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Fred J. Blaney, for the past nine years superintendent of the General Alloys Co., Boston, and formerly with the Driver-Harris Co., Harrison, N. J., has resigned to take charge of the alloy division of the Ohio Steel Foundry Co., Springfield, O. Mr. Blaney is one of the pioneers in the manufacture of heat-resisting alloys in the form of rod, wire sheet and castings, and comes from a family that has been connected with the steel foundry industry for the past 50 years. He had his training under the supervision of his father who was general manager of the Benjamin Atha Steel Casting Co., Newark, N. J.

Fred J. Blaney

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C. B. McNaught, president of the Dominion Steel & Coal Corp., Sydney, N. S., has resigned, owing to ill health and has been succeeded by Sir Newton Moore, senior vice president, who has been associated with the company since 1920. Sir Newton will move from England to Canada.

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Dr. W. D. Coolidge, associate director of the research laboratory of the General Electric Co., Schenectady, N. Y., received the Washington Award for 1932 "in recognition of devoted, unselfish and pre-eminent service in advancing human progress," at Chicago, Feb. 24.

Obituaries

JOHN W. GALVIN, 84, well known as an open-hearth steel expert and for 30 years open-hearth superintendent of the Inland Steel Co., Chicago, died at Long Beach, Calif., Feb. 17. He was born in Nashua, N. H., and in 1867, when he was 19 years old, had charge of the Siemen's regenerating heating furnace at the Nashua Iron & Steel Co., Nashua. Eight years later Mr. Galvin entered the employ of the Pennsylvania Steel Co., Harrisburg, Pa., as superintendent of open hearths, and from 1878 to 1880 he was connected with the Roanoke Iron Co., Chattanooga, Tenn.

Prior to entering his long service with the Inland Steel Co. in 1903, he was open-hearth superintendent for Illinois Steel Co., Chicago. In 1931 Mr. Galvin returned to the scene of his steel training at Nashua, where a tablet was erected with fitting ceremonies to his participation then in the making of steel-forged ports for the iron-clad MONITOR, famous in the Civil war. Among those of his immediate family surviving Mr. Galvin are John E. Galvin, president of the Ohio Steel Foundry Co., Lima, O., and James W. Galvin, Arthur G. McKee Co., Cleveland. Funeral services at Mr. Galvin's late home, Indiana Harbor, Ind., were conducted on Feb. 23.

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Joseph Kerkhoff, 57, founder and general manager of the Kenosha Die & Stamping Co., Kenosha, Wis., and well known in the metal stamping industry of the Middle West, died Feb. 18.

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George E. Leighton, 54, president of the Canadian Steel society, for 30 years a resident of Canada, died at Montreal, Que., Feb. 23. During the war he served as engineering expert to the Canadian shipping board.

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Albert L. Schultz, 69, head of A. L. Schultz & Son, Chicago, died in that city Feb. 14. With Fred Lemley, Mr. Schultz organized the company, in 1896, which manufactures clutches and transmission machinery and is engaged in jobbing machine work. A native of Germany, Mr. Schultz was associated with machine shops and machinery production throughout his career.

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Charles T. Hildebrandt, 76, plant engineer, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., died Jan. 31. Mr. Hildebrandt entered the services of the Campbell, Wyant & Cannon Foundry Co. 18 years ago, and with the exception of an interval during the war, the connection was continuous. He was a designer

(Concluded on Page 56)

MIRRORS of MOTORDOM

DETROIT

UNLESS delays intervene, Ford will have made the first public showing of his new four and eight before this column appears again. Next Friday, March 4, is now the tentative date. But introduction will be one thing, quantity production another.

Uneven banks of parts for both models suggest the possibility of small-scale assembly within a few days. Steel for volume production, however, had not been released to the end of last week, although expected daily.

Releases of parts, which have emanated from Ford on a small scale recently, have been notably expanded the past few days, the activity being reminiscent of the period just prior to the announcement of Model A in 1927, when Ford telegraphed and telephoned releases three to four days prior to the beginning of assemblies.

Toledo parts manufacturers, in particular, have been speeded up, and material is being trucked to the Rouge plant. One partsmaker is said to have received a release of 15,000 units covering a 20-day period. Many workmen in Toledo have been recalled, as a result. Incidentally, Ford has been soliciting orders for the new models from his material and parts suppliers.

Ford May Start March 15

The most optimistic in Detroit look for noteworthy assembly of the new models beginning about March 15. The most pessimistic put the date at April 15. The latter credit Henry Ford with awaiting a more favorable retail market.

To an extent, this market probably will be partly Mr. Ford's own making. Even the mere showing of the new line will relieve the tension. Buyers who have deferred a decision until they see the new Ford can proceed; other low-price car manufacturers can gage their competition and act accordingly.

The new Fords, it can be stated, will be as great an advance over Model A as Model A was over Model T. The placing of an order for 50,000 gasoline gages confirms the report the gas tank will be at the rear. The slanting windshields will be visorless, with a sun visor over the driver's seat standard equipment.

Need 100,000 for Dealers

The front appearance of the new models centers on a more or less rectangular radiator shell which Ford himself is making. The use of corrosion-resistant steel for the shell has been abandoned, and the new shell with an effect toward a top apron departs from the conventional Model A design.

Over 12,000 bodies have been delivered by Briggs, Murray and Budd, the bodies being practically identical for the fours and the eights. This would scarcely average 2 cars per Ford dealer. For a complete stocking of Ford dealers well over 100,000 cars is required, hence it is assumed that Ford will be a powerful consuming factor in steel and other lines for at least 2 months after attaining production.

When 1931-32 automobile history is written it will follow this theme: Determined producers without the leadership of Ford laid plans in the fall of 1931 for their spring lines, produced them, exhibited them. But Ford by February had stalled the parade. Going into March, practically no manufacturer—including Ford—has a schedule.

Chevrolet, to parry these new Fords, is reported having important developments in the background and may be taking its experimental eight more seriously. At all events, Chevrolet production has been further curtailed, and some steel shipping dates have been further set back.

However, with the Ford competition known in several days, Chevrolet and other low-price manufacturers can proceed. Chevrolet originally scheduled 53,000 units for February but reduced this to 40,000. The tentative schedule—one of the few in the industry—for March is 50,000 units and for April 65,000. Whether this schedule is entirely the present 6-cylinder model, or whether a four or an eight may be added, as an unconfirmed report has it, is not now known.

Buick, since the fine showing of December, has fallen off badly. Observers attribute the decline to the inroads of both the new Packard low-price eight and the Graham. Fisher Body is calling back experienced die and tool men for late March with the view of revising dies for the Buick radiator, hood and entire front-end. Wizard control is understood to be in for deletion.

Olds Motor Works curtailed Feb. 24 to 2 days, 7 hours daily. Though Pontiac is having about 2000 bodies weekly made for it by Fisher Body, actual assemblies have been under that mark.

Chrysler Output Holds

Chrysler apparently is least impaired by the shadow of uncertainty Ford has been casting. From steel scrap lists this company experienced a good January and fair February. Dodge at 300 units, 5 days, and DeSoto at 500 models, 4 days, are bulwarks.

Plymouth has not taken as much steel for its new models as was anticipated. Some solution to the difficulty of floating power in the present Plymouth frame is almost a certainty in the new models. Price will

be their foremost appeal, with less stress on radical design departures.

Graham last week received the 9000th body on its 1932 program. These date from November, 1931. The popularity of the new cars stacks up against total production for this maker of 19,500 models in all of 1931.

Graham's high for 1932 has been assembly of 140 jobs a day. At present the factory schedule is 90 a day, 5 days. Last week, assemblies were begun, somewhat delayed, on the "Blue Streak" coupe. Sedans had been the chief production item.

Reo Is Slow To Buy

In spite of the fact that Reo will bring out its new car in the $1000 class in April, few material orders are being placed. Murray is expected to do the body work. The new Reo embodies many of the radical design features of the Royale model.

Even Hudson-Essex is reported feeling the effect of the paralysis in the industry now preceding the Ford's unveiling. Hudson is not working 6 full days in all departments, but the week's assemblies along with Essex will average 1700 units.

Studebaker, which posits higher retail prices on increased cost of materials, is getting some of its steel requirements cheaper. . . . DeVaux Hall, recently purchased by Continental Motors, probably will not be continued long in production; a short run beginning late in March will convert part of the inventory into cash. . . . Ford will probably use some adaption of the centrifuse brake drum idea on his new models. . . . Spicer Mfg. Co., Toledo, O., has taken on the manufacture and sale of a powerflow self-operating clutch under license from the Automatic Drive & Transmission Co. Inc., Gloucester, N. J.

Financial News of Steel Industry

REPUBLIC STEEL CORP., Youngstown, O., reports net loss of $9,034,152 in 1931, compared with net loss of $3,522,003 in 1930. In 1931 the Republic company netted a profit of $3,020,544 from operations after selling and administrative expense. However, depreciation of $7,636,406 and indebtness interest of $3,609,069 as well as other adjustments netted a loss of $8,734,153. Guaranteed preferred dividends were paid on Trumbull-Cliffs Furnace Co., augmenting this figure by $300,000.

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Ross Gear & Tool Co., Lafayette, Ind., reports net profit of $246,422 after all charges including 1931 tax. This compares with net of $336,641 in 1930.

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Granite City Steel Co., Granite City, Ill., reports 1931 earnings of $332,300, after charges, equal to $1.28 a common share. The per share net is almost half that of 1930. Inventory assets have been written down to current values.

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Audited report of Acme Steel Co., Chicago, for 1931 shows net income of $345,681, or $1.01 a share on 343,046 common, a slight decrease from net of $372,027, or $1.08 a share, shown in unaudited pamphlet report issued earlier. Decrease was due largely to inclusion in current expense of exchange depreciation on Canadian balances and charging off of deposits in closed banks.

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Sharon Steel Hoop Co., Sharon, Pa., reports loss of $1,396,996 for 1931, against loss of $752,803 in 1930. In 1931 the company showed a gross profit from operations of $144,111, but idle time expense made an operating loss of $138,123. Depreciation charges of $925,588, plus interest on bonds and notes payable accounted for the net loss.

Business Is Better

ALGOMA STEEL CORP., Sault Ste. Marie, Ont., has lighted two open-hearth steel furnaces, and started its blooming and 12 and 18-inch merchant mills, re-employing 650 men.

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Terre Haute Malleable & Mfg. Co., Terre Haute, Ind., is increasing its force 20 per cent and looks for further expansion of business in the spring.

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Chicago Flexible Shaft Co., Chicago, reports sales of electrical appliances and industrial furnaces thus far in 1932 ahead of the same period of 1931.

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Borg & Beck Co., Chicago, division of Borg-Warner Corp., estimated automobile clutch sales in February exceeded January by 28 per cent. January topped December by 7 per cent.

Auto Output 119,344 Units in January

January production of automobiles was approximately on a level with the output of December. Passenger cars and trucks assembled during January totaled 119,344 units, comparing with 121,541 for a revised December figure and 171,848 units in January, 1931. Declining truck production was the cause of January failing to better December, according to the department of commerce:

	—United States—			Canada
1931	Total	Passenger cars	Trucks	Total
Jan.	171,851	137,805	33,534	6,496
Feb.	219,939	179,890	39,520	9,871
Mar.	276,341	230,835	45,096	12,993
April	336,939	286,252	50,022	17,159
May	317,163	271,135	45,688	12,739
June	250,657	208,955	41,342	6,835
July	218,961	182,927	35,854	4,220
Aug.	187,197	155,321	31,772	4,544
Sept.	140,566	109,087	31,338	2,646
Oct.	80,142	57,764	21,727	1,440
Nov.	68,867	48,185	19,683	1,247
Dec.*	121,541	96,753	23,363	2,432
Yr.*	2,389,738	1,967,055	416,640	82,621
1932				
Jan.	119,344	98,706	20,541	3,731

Here and There In Industry

BLAW-KNOX CO., Blawnox, Pa., and the Western Pipe & Steel Co., San Francisco and Los Angeles, have closed an agreement whereby the latter will manufacture and sell Blaw-Knox products on the Pacific coast through the organization of a new company to be called the Blaw-Knox & Western Pipe Corp.

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National Steel Car Co., Hamilton, Ont., has arranged to manufacture for Canadian distribution the products of the LaPlant-Choate Mfg. Co., Cedar Rapids, Iowa.

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Diniaco Bros. & Co., Steubenville, O., specializing in steel mill painting and sheeting, have recently completed painting and sheeting the new plants of the West Virginia Rail Co., Huntington, W. Va., and Electro Metallurgical Co. at Alloy, W. Va.

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New Orleans Car Wheel Co., New Orleans, has established a plant at Southport, a suburb of New Orleans, for manufacture of car wheels and railroad rolling stock. J. B. James is president and general manager, and George Q. Green is plant superintendent.

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Burke Electric Co., Erie, Pa., has placed distribution of its line of motors, generators and welders in the Chicago district in the hands of Albert J. Walz, 205 West Wacker drive, room 200. P. J. Burrill and J. L. Vergillio have been made distributors for the same company for northern Ohio, with headquarters at 942 Prospect avenue, Cleveland.

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American Rolling Mill Co., Mid-

(Concluded on Page 56)

EDITORIAL

Michael Faraday—Pioneer In Alloy Steels

IN 1812 a 21-year old bookbinder's assistant in London had the good fortune to listen to several lectures delivered by Sir Humphry Davy. Fired with enthusiasm by what he heard, the young man prepared a detailed account of the lectures and submitted it to the eminent scientist with a plea for employment in the laboratories of the Royal Institution. Consulting Pepys, a fellow scientist, Sir Humphry suggested that the young applicant be put to washing laboratory glassware. "If he is good for anything he will do this willingly; if he refuses then he is good for nothing."

The youth accepted eagerly, and dating from this fortuitous change in environment, Michael Faraday advanced rapidly to recognition as one of the greatest experimental philosophers the world has ever known Although remembered best for his discoveries of the action and laws of electromagnetic induction, Faraday deserves rich honor in other fields of scientific research. His book "Chemical Manipulation" ranks as one of the most important contributions to the literature of chemistry and stamps the author as one of the great chemists of his time.

Sir Robert Hadfield Appraises Faraday's Researches on Alloy Steels

But even more eloquent testimony of the versatility of this British scientist is found in the record of his work in metallurgical research. Faraday's activities in this field—long overshadowed and hidden from public recognition by his more notable achievements in electricity—now have been brought to light. It has remained for Sir Robert A. Hadfield, in a remarkable book* entitled "Faraday and His Metallurgical Researches," to establish the "Father of Electricity" as the rightful holder of the additional honor, "Pioneer of Alloy Steels."

With the enthusiasm of one who has won world-wide recognition for his own discoveries in alloy steels, Sir Robert has delved into all available records pertaining to Faraday's venture into the realm of metallurgy. By great good fortune he was permitted to conduct a thorough chemical and physical examination of 79 specimens of Faraday's alloys, to manufacture a razor and miniature knives from Faraday's material, and to examine historic razors forged more than 100 years ago from Faraday's steels.

After reading Sir Robert's absorbing account of these investigations, one cannot escape the fact that Faraday's work was in surprising accord with present day objectives in the development of alloy steels. His stated purpose in experiments conducted from 1819 to 1824 was twofold: "First, to ascertain whether any alloy could be artificially formed better for the purpose of making cutting instruments than steel in its purest state; and second, whether any such alloys, would, under similar circumstances prove less susceptible of oxidation. New metallic combinations for reflecting mirrors were also a collateral object of research."

Work on Chromium Might Have Led To Discovery of Stainless Steel

In view of the emphasis placed during the past few years on alloy steels possessing improved cutting qualities, greater resistance to corrosion, or ability to take a mirror-like finish, one must agree with Sir Robert that Faraday's investigations reflect amazing prophetic vision.

He experimented with steel alloyed with nickel, silver, platinum, rhodium, iridium and osmium, palladium, titanium, chromium, copper, tin and gold. Apparently the now important elements manganese and vanadium were not available to him. His researches on chromium steels appear to have been left uncompleted but there are indications that had he continued "he might well have discovered stainless steel."

The great pity is that Faraday's knowledge and skill were not available at a time when they could be utilized effectively. The trail he blazed became obliterated before the scientific and industrial world was prepared to follow in his footsteps.

But this should add to, rather than detract from, the credit due Faraday. All who recognize the great importance of alloy steels will applaud Sir Robert's apt appraisal:

"It cannot be denied that his work was indeed a brilliant anticipation of similar labors by later metallurgists, and that it passes triumphantly the acid test of genuine and successful research —the search for and the discovery of fresh knowledge."

*"Faraday and His Metallurgical Researches," by Sir Robert A. Hadfield; Chapman and Hall, London; American distributor, The Penton Publishing Co., Cleveland.

THE INDUSTRIAL DIAL

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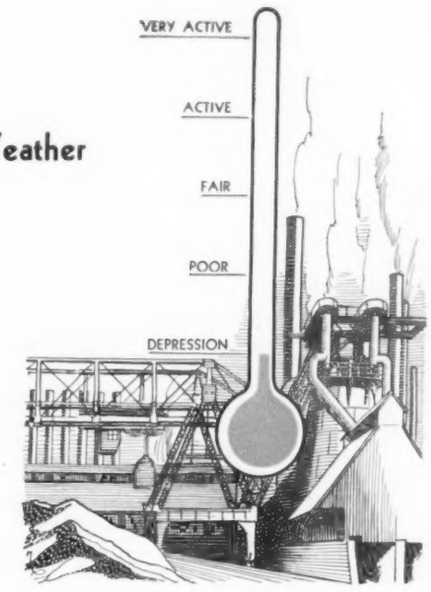
TWO months of the new year have passed and still the underlying support necessary for a sustained improvement in business conditions has not appeared. Strong influences are being brought to bear on the nation's most serious problems and, while progress is being made, the results are not yet discernible.

The experience of January and February shows conclusively that the trend of business in 1932 will not parallel that of last year. The sweeping upturn which characterized the early months of 1931 has been conspicuous by its absence. A year ago the steel industry bad farewell to February with steel ingot operations standing at 53 per cent of capacity. Today the comparable figure is a bare 25 or 26 per cent. At this time last year STEEL's composite of prices was $31.61; now it is $29.53.



1931 Upturn Proved False

On the basis of such comparisons it would be easy to assume a decidedly pessimistic attitude toward the present outlook, yet the situation really is encouraging. The rather rapid upturn last year, which carried steel operations up to a high point of 57 per cent in the third week of March, proved to be futile. It was followed by a long, disheartening slide to lower levels. Today with activity at a bare minimum, we are certain to be spared the shock which attended the collapse last spring. Any marked change in the near future must be for the better.

Another source of strength in the present situation is the condition of the financial institutions. Last year many banks were enjoying a sense of security that later was proved false. Today the bad spots in the financial situation have been revealed. Already the number of bank failures is diminishing. Money in savings accounts again is on the rise. The entire credit situation has improved considerably since the turn of the year.

Where Business Stands

Monthly Average, 1931 = 100

	Jan., 1932	Dec., 1931	Jan., 1931
Steel Ingot Output	70.2	62.5	113.7
Pig Iron Output	62.6	63.2	110.6
Freight Movement	77.4	79.4	96.5
Building Construction	41.3	56.4	80.8
Automobile Output	61.4	60.2	86.6
Wholesale Prices	88.2	90.3	108.6

Teamwork More Noticeable

Likewise many other problems which clouded the future this time in 1931 have been solved in whole or in part. The wage question was a major issue 12 months ago; now it is a minor factor. Then extravagance in government expenses was unchecked; today it is being subjected to effective attack. A year ago we were worrying about a dozen and one international controversies; currently we are concentrating on the vital problems at home. In early 1931 our politicians were spouting wild theories; at this moment they are working in harmony on constructive measures. At this time last year business and the government were at loggerheads; now they are in accord on many questions.

Future More Promising

Potentially the outlook for business is much brighter today than it was at the beginning of March 12 long months ago.

Business Trend Charts of the Month

Production

Steel ingot production ..... Feb. 15, p. 20
Pig iron production ..... Feb. 15, p. 21
Industrial production ..... Feb. 1, p. 27

Demand

Unfilled orders, U. S. Steel Corp. ..... Feb. 15, p. 21
Railroad car orders ..... Feb. 15, p. 20
Index of machine tool orders ..... Feb. 22, p. 21
Building construction ..... Feb. 29, p. 21
Automobile production ..... Feb. 1, p. 28; Feb. 29, p. 22

Prices

Bradstreet's index of commodity prices ..... Feb. 15, p. 19
Iron and steel price index ..... Feb. 8, p. 29; Feb. 22, p. 19; Feb. 29, p. 22

Miscellaneous

Foreign trade ..... Feb. 22, p. 22
Freight traffic ..... Feb. 1, p. 28; Feb. 8, p. 30; Feb. 22, p. 22; Feb. 29, p. 21
Commercial failures ..... Feb. 8, p. 29
Iron and steel imports and exports ..... Feb. 8, p. 30
United States Steel Corp. earnings ..... Feb. 8, p. 27
Monthly railroad earnings ..... Feb. 22, p. 21

Thumb Nail Sketches Of Business

Failures Down, Liabilities Up in Canada

Commercial failures in Canada numbered 2216 in 1931 against 2402 in 1930, but liabilities involved were $52,000,000 compared with $48,000,000 in the previous year.

Belting Consumption Still Lags

The consumption of finished leather belting, usually a good index of prospective industrial activity, remains at abnormally low levels—*The Business Survey*, National Industrial Conference Board.

Production of Electricity Declines

Output of electric power in January declined by several per cent, thereby running counter-current to the seasonal trend, which calls for a slight increase in that month. Consumption of electricity for residential and commercial use continues below normal, indicating a sustained shrinkage in public purchasing power.

Predict 32 Per Cent Average

The Goldman Sachs Trading Corp. has made a survey of the consumption of steel, from which it draws the following conclusions:

"Summarizing our estimates of rolled steel, we expect a production of 7,500,000 to 7,750,000 gross tons during the first six months of 1932, as compared to a tonnage of 11,450,000 gross tons in the same period of 1931. This schedule of rolled steel production corresponds to steel ingot production of 10,000,000 to 10,300,000 gross tons against 15,260,000 in 1931, a reduction of 33 per cent. For the whole industry, steel ingot production is not likely to exceed 40 per cent of capacity in any week and the average capacity operations for the period will approximate 31 to 32 per cent. Per cent capacity operations for the peak month should approximate 35 to 36 per cent. Steel operators are hopeful for better than our estimates as they are looking for weekly operating rate to range between 35 and 45 per cent in March and April.

Speedy Deflation

Bradstreet's index of commodity prices for Feb. 1, namely $7.52, is the lowest since July, 1901, when the figure was $7.51. The lowest annual average for the index was $5.91 in 1896. The average in 1900 was $7.88, in 1899 it was $7.21, in 1898 it was $6.57 and in 1897 it was $6.12. These figures show that a comparatively small shrinkage in the present index would carry it to levels which have not been plumbed since the end of the nineteenth century. Can it be possible that we now are witnessing a speedy deflation from wartime inflation in 12 or 13 years, which in the case of the Civil war required about 30 years for accomplishment?

Per Capita Wealth Declining

According to a recent estimate by the National Industrial Conference Board the wealth of the United States in 1930 was $329 billion as compared with $361 billion in 1929. The per capita wealth dropped from $2,977 in 1929 to $2,677 in 1930. National income per capita of population dropped from $701 to $578, while national income per gainful worker dropped from $1,763 to $1,452 in the same period.

The Barometer of Business

Industrial Indicators

	Jan., 1932	Dec., 1931	Jan., 1931
Pig iron output (Daily average, tons)	31,336	31,694	55,337
Machine Tool Index	59.2	54.3	65.3
Unfilled orders (tons)	2,648,150	2,735,353	4,132,351
Ingot output (Daily average, tons)	56,203	50,092	91,971
Dodge Bldg., awards in 37 states (sq. ft.)	12,600,000	17,209,800	24,634,000
Automobile output	*126,000	123,965	178,344
Coal output, tons	26,579,000	31,672,000	38,542,000
Business failures, number	3,458	2,758	3,316
Business failures, liabilities	$96,860,205	$73,212,950	$94,608,212
Cement production, Bbls.	4,989,000	5,998,000	6,581,000
Cotton consumption, bales	435,337	415,517	454,188
Car loadings (weekly average)	554,640	568,305	698,108

*Estimated.

Foreign Trade

Exports	$150,000,000	$183,577,000	$249,598,000
Imports	$136,000,000	$152,886,000	$183,148,000
Gold exports	$107,863,000	$32,651,000	$54,000
Gold imports	$32,905,000	$89,509,000	$34,426,000

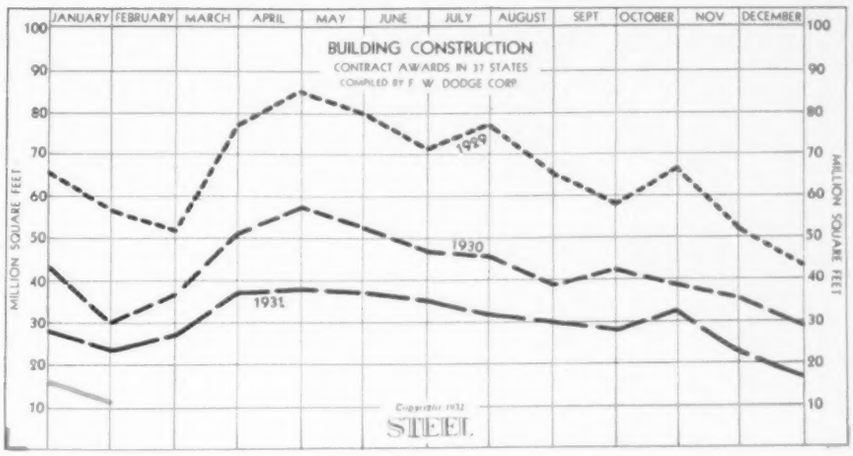
Financial Indicators

	Jan., 1932	Dec., 1931	Jan., 1931
25 Industrial stocks	$116.09	$121.99	$215.03
25 Rail stocks	$29.78	$29.29	$88.63
40 bonds	$67.14	$63.48	$85.00
Bank clearings (000 omitted)	$26,120,366	$28,618,327	$39,310,138
Commercial paper rate (N. Y., per cent)	4	4	2¾
*Commercial loans (000 omitted)	$7,259,000	$7,327,000	$8,374,000
Federal Reserve ratio, per cent	65.8	61.9	76.3
**Railroad earnings	$21,263,164	$37,064,372	$49,371,769
Stock sales, N. Y. stock exchange	34,342,000	50,190,478	52,543,000
Bond sales, par value	$286,527,000	$335,205,450	$264,117,000

*Leading member banks Federal Reserve System.
**December, November and December respectively.

Commodity Prices

				Monthly Average 1913
STEEL's composite average of 14 iron and steel prices	$29.98	$30.32	$31.71	$26.32
Bradstreet's index	$7.52	$7.73	$9.31	$9.21
Wheat, cash (bushel)	73c	74c	99c	92c
Corn, cash (bushel)	51¾c	52c	85½c	51c
Petroleum, crude (Bbl.)	75c	75c	92c	$2.50



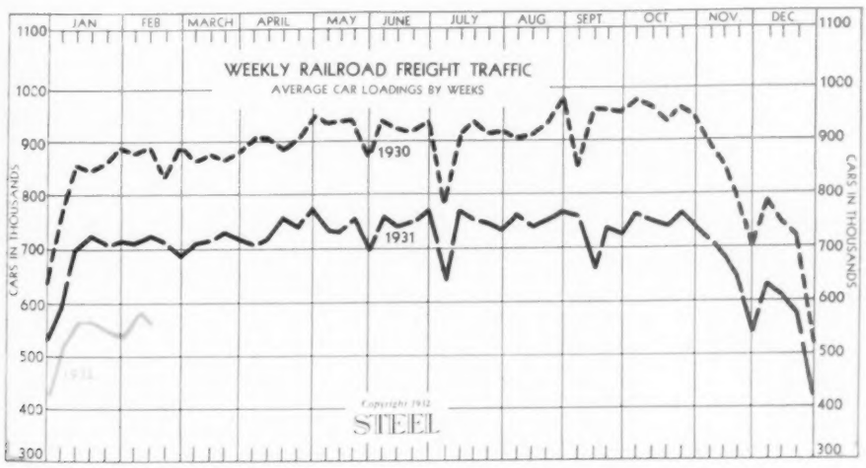
	Square Feet
Jan., 1932	12,600,800
Dec., 1931	17,209,800
Jan., 1931	24,634,900

Reports Show Building Construction At Low Ebb in January

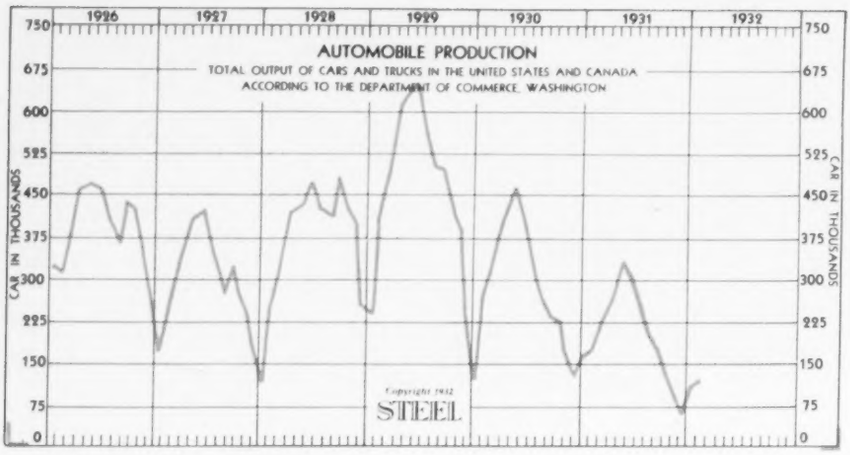
Building awards dropped nearly five million square feet in January, according to the monthly report of the F. W. Dodge Corp. Awards in 37 eastern states involved 12,600,800 square feet in January as compared with 17,209,800 in December and 24,634,900 in January, 1931. The valuation of construction contracts awarded in the month of January totaled only $84,798,400 as compared with $227,956,400 in the same month of last year, a decline of 63 per cent. Residential building accounted for 6,921,900 square feet and industrial work for 300,300 square feet of the total. A year ago industrial projects involved a square footage of 6,632,700 and residential totaled 12,235,100 square feet.

Freight Traffic Again Recedes in Second Week of February

Loadings of revenue freight for the week ending Feb. 13 totaled 562,465 cars, according to statistics from the car service division of the American Railway association. This is a loss of more than 12,000 cars from the preceding week, and nearly 200,000 cars below the corresponding week last year and 330,675 cars under the same period in 1930. The upturn from the year-end low point has not been as sharp this year as in 1931 and 1930. Consequently the curve thus far in 1932 is lagging almost as far below the 1931 trend line as it fell below the curve for 1930. A slight gain in loadings earlier in February was due largely to increased coal shipments.



	1932	1931
Feb. 13	562,465	720,689
Feb. 6	574,756	719,053
Jan. 30	561,157	719,397
Jan. 23	562,938	715,454
Jan. 16	573,276	691,753
Jan. 9	572,504	712,128



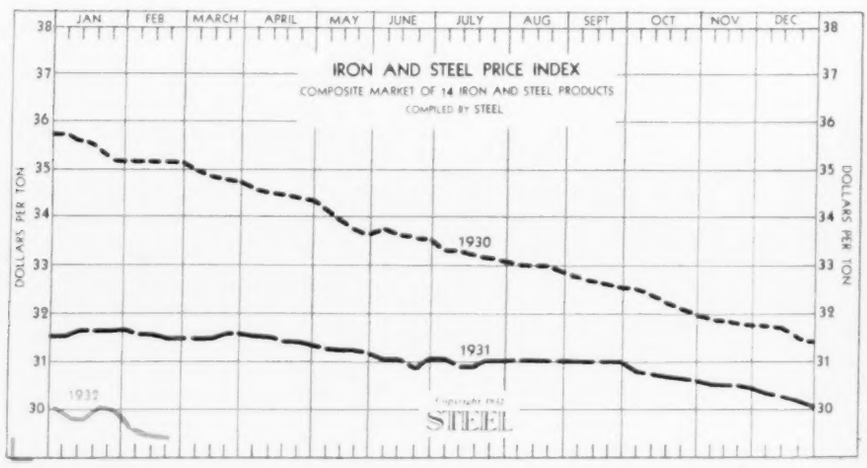
Jan., 1932	126,500
Dec., 1931	123,965
Jan., 1931	178,344

Motor Car Output in January Falls Short of Expectations

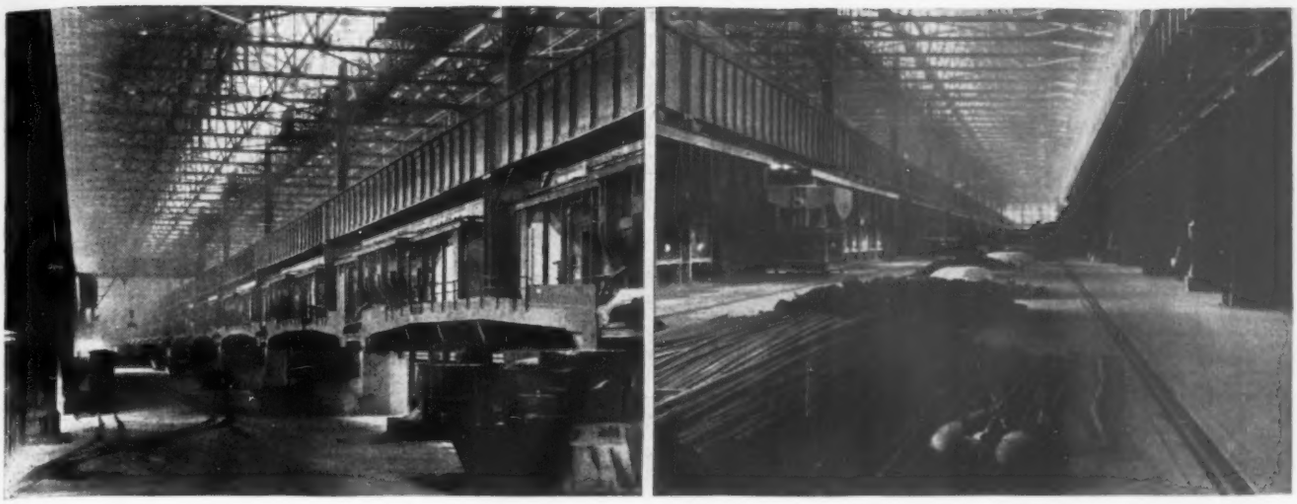
Uncertainty as to developments in the low-priced automobile market served as a curb on motor car production in January. As a result actual output fell short of expectations. January's total, estimated at 126,500 units, compares with 123,965 in December and 178,344 in January, 1931. The increase for the current January is much smaller than in the corresponding month a year ago. The recent announcement by Mr. Ford—as yet unaccompanied by sizable purchases of steel—has had the effect of stimulating interest in developments of the early future and also of discouraging sales of cars until the new models are displayed. The industry is in a state of watchful waiting.

Steel Prices Lower As Stabilization Movement Gains Momentum

Conflicting influences tend to keep iron and steel prices in a state of uncertainty. STEEL's composite has dropped gradually for five consecutive weeks to a level of $29.53, where it is assailed on one side by the effects of competition made desperate by the low volume of business and supported on the other side by determined efforts by many producers to stabilize prices. At the moment the constructive forces working for a more favorable price situation seem to be making good progress. A year ago when steelworks operations were at 53 per cent instead of 26 per cent, STEEL's composite stood at $31.65. Today it is more than $2 lower, but the tone of the market is improving.



	1932	1931
Feb. 20	$29.53	$31.65
Feb. 13	29.57	31.69
Feb. 6	29.60	31.69
Jan. 30	29.60	31.73
Jan. 23	30.00	31.73
Jan. 16	30.08	31.73



Pouring floor (left) and charging floor (right) of 14-furnace open-hearth plant at South works

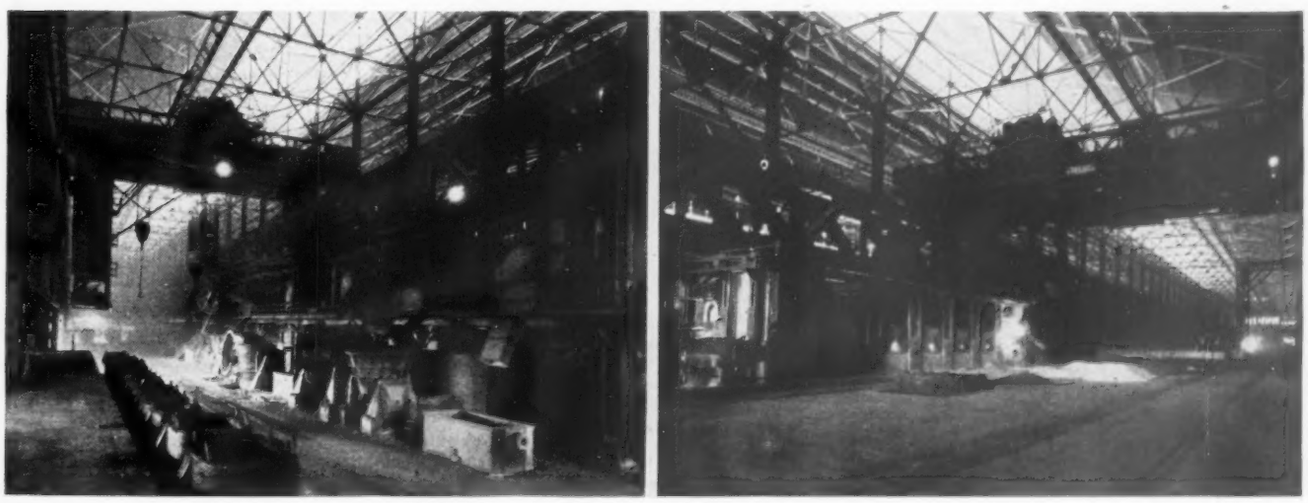
Open-Hearth Facilities Expanded

Illinois Steel Co. Adds Seven Basic Units at Gary Works and 14 At South Chicago Works, Bringing Total to 95 in Chicago District

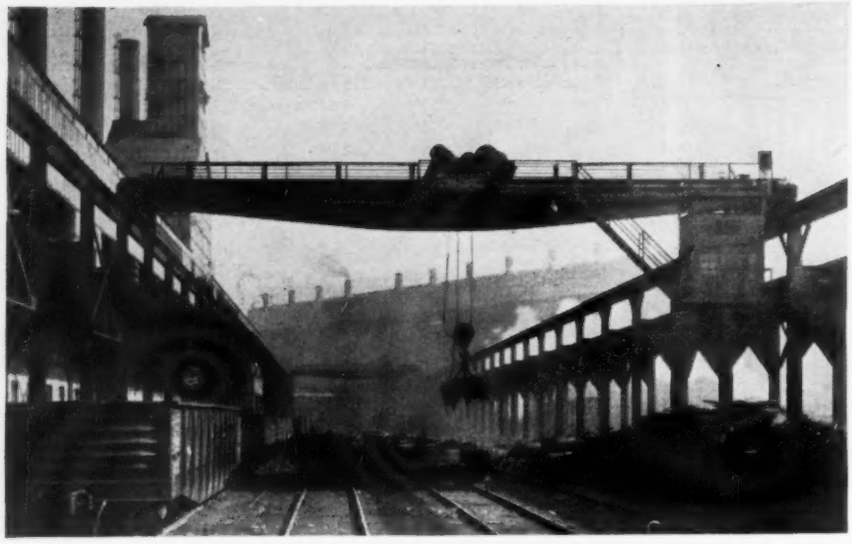
Part I

EXPANSION of steelmaking facilities at the Gary, Ind., and South Chicago plants of the Illinois Steel Co. will afford an increase of 21 basic open hearths and 2,400,000 tons. Added to the 45 open hearths at the Gary works are seven new basic units thus making 52 furnaces which will have an annual output of 5,230,000 tons. The 29 open hearths at the South Chicago works are augmented by 14 units which increase the annual production of basic steel at this plant to about 4,000,000 tons. Including the two new steelmaking departments, the Illinois Steel Co. will have a total of 95 basic open hearths in the Chicago district and a combined basic ingot production of about 9,230,000 tons annually.

The seven new furnaces at the Gary works are 150-ton stationary units and are housed in a building 154½ x 816 feet, 83 feet of the width comprising the charging side and 71½ feet the pouring side. Provision is made for the installation of an additional furnace and with a view of future extension to a 14-furnace shop. The furnaces are built with 16 x 48-



Pouring floor (left) and charging floor (right) of seven-furnace open-hearth plant at Gary works



Open-hearth stock yard at Gary works, showing scrap being loaded into charging boxes by 10-ton crane and magnet

foot hearths, measure 19 x 78 feet outside of brickwork and are spaced on 96-foot centers. The brickwork of the furnace bottom is supported on structural steel beams and columns to provide air cooling and to make breakouts of molten metal less likely than when the furnace bottom is supported directly on a concrete foundation. The charging floor is 20½ feet above yard level thereby avoiding the necessity of pits for the steel ladles and providing ample height for regenerative chambers and space for the installation of a preheater later if found advantageous.

A 600-ton mixer is housed in a building at one end of the open-hearth shop and is served by a traveling crane having a 125-ton main hoist and a 40-ton auxiliary. Provision is made for the installation of a second mixer. A lean-to, housing the lining pits and drying stands, is served by one of the 200-ton pouring cranes, the runway of which extends north into the mixer building. Hot metal from the mixer is conveyed to the furnaces in 100-ton ladles mounted on cars which operate the entire length of the building. The ladle is lifted off the car and carried across the charging floor by one of two 150-ton overhead traveling cranes to the furnace where it is charged over a suitable runner. Raw materials are charged into the furnace by two 12-ton charging machines. Two mechanical producers, 10 feet in diameter, supply gas for each furnace. Each producer will gasify about 5000 pounds of coal per hour.

A 60 x 816-foot lean-to houses the tracks for raw materials, furnace flues, stacks and reversing valves. Seven 600-horsepower waste-heat boilers of the horizontal fire-tube type are installed in the building, each having 7820 square feet of heating surface and being equipped with a superheater of 450 square feet of heating surface. Steam at 275 pounds per square inch is generated.

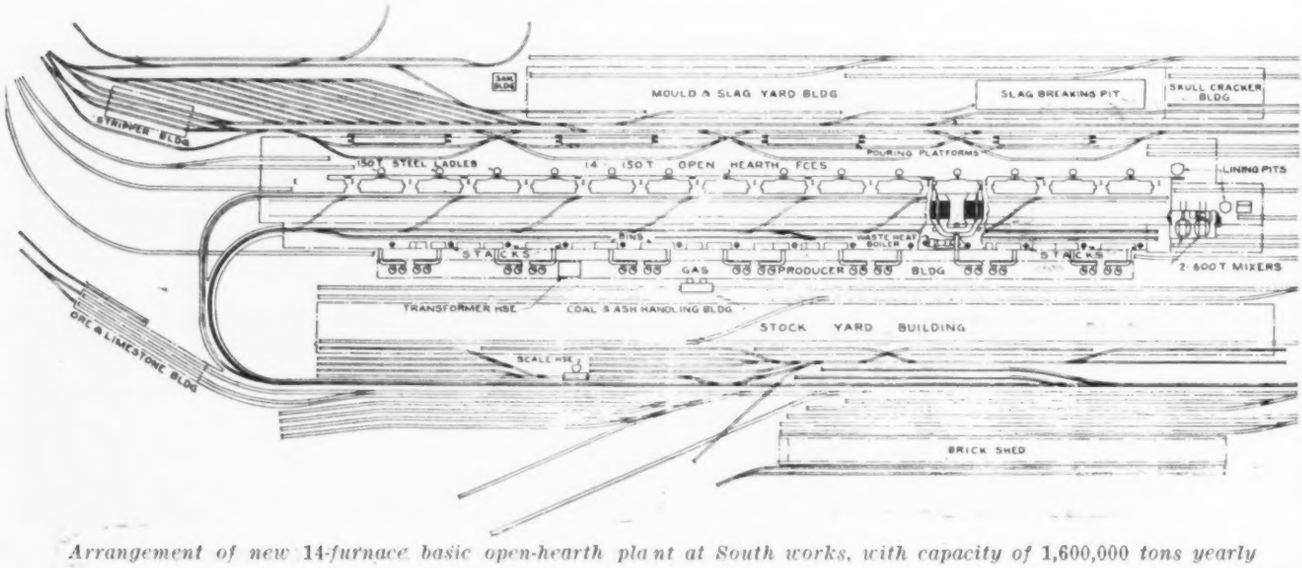
Steel is tapped into ladles of 150-ton capacity. Each furnace is provided with a 6-ton jib crane for handling the tapping spouts. The pouring side of the open-hearth building is served by two 200-ton traveling cranes, each with a span of 65 feet 2 inches. Three pouring platforms are located along one side of the pouring aisle, each served by individual tracks on which the ingot cars and molds are spotted. These tracks connect with the mold yard which is commanded by a traveling crane of 94½ feet span.

New Equipment at South Works

Steel requirements at the South works for the wide flange beam mill and the new slabbing and plate mills are covered amply by the 14 new 150-ton open-hearth furnaces located at the north end of the works, immediately east of the existing No. 2 open-hearth plant. The stock yard, housed in a building 88 x 1748 feet 4 inches, is commanded by three 10-ton cranes and is of sufficient capacity to handle limestone, scrap and ore requirements of both the new steelworks and the existing No. 2 open-hearth division.

The fourteen 150-ton furnaces are 21 x 84 feet outside of brickwork, have 17 x 46-foot hearths and are spaced 103 feet 4 inches center to center. The units are of the pan-bottom type and are supported on structural steel beams and columns similar to the construction followed at the Gary works. The charging floor, 72 x 1632 feet 8 inches, is placed 20½ feet above yard level and is served by two 150-ton traveling cranes.

The mixer building located at one end of the charging floor contains two 600-ton mixers and consists of two parts, the charging side and the pouring side. The charging side of the building, 47 x 206 feet 8 inches,



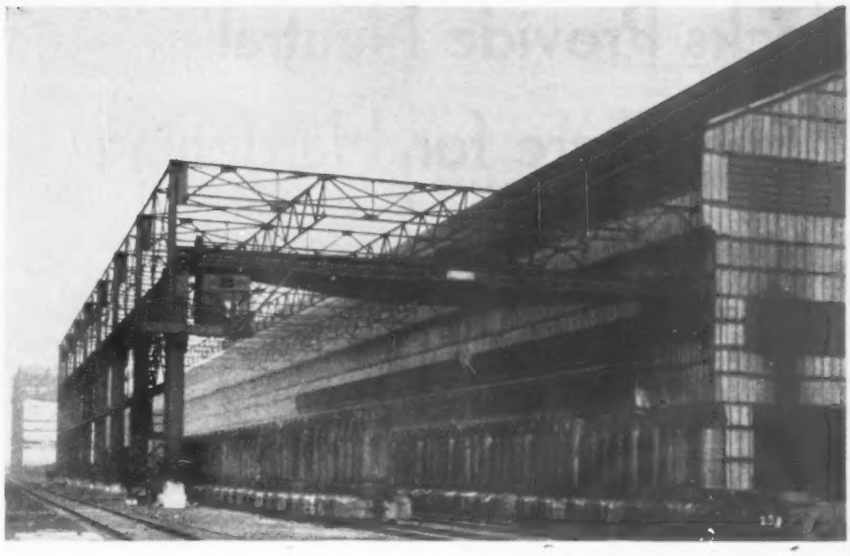
Arrangement of new 14-furnace basic open-hearth plant at South works, with capacity of 1,600,000 tons yearly

is commanded by a 100-ton crane of 41-foot span. The pouring side of the building, 72 x 165 feet 4 inches, contains the weighing scales and a 100-ton ladle lining pit. This part of the building is served by one of the open-hearth furnace charging cranes, the runway of which extends south into the mixer building.

14 Waste-Heat Boilers

Hot metal is conveyed from the mixers to the furnaces in 100-ton ladles carried by the 150-ton overhead traveling crane. Four 10-ton charging machines serve the battery of furnaces. Fourteen 640-horsepower waste-heat boilers of the horizontal fire-tube type are installed in the lean-to, 43 x 1550 feet. Each boiler is designed for 7960 square feet of heating surface and is equipped with superheater of 460 square feet of heating surface. Steam is generated at 275 pounds per square inch. This lean-to also houses tracks for raw materials, furnace flues, stacks and reversing valves. The gas producer building, 31 x 1354 feet 8 inches, contains twenty-eight 10-foot diameter mechanical gas producers, two to each furnace. Each unit is designed to gasify approximately 5000 pounds of coal per hour.

Steel is tapped into ladles of 150-ton capacity. The ladles are transferred from the furnace to the pouring platform by one of four traveling cranes, each having a 225-ton main hoist and a 50-ton auxiliary. Four pouring stations are provided along one side of the aisle. The molds are stored in a separate building, 88 x 1157 feet 4 inches, which parallels the pouring platforms. At the south end of this building is a slag breaking pit, 50 x 300 feet, which is served by a double-trolley 40-ton crane. Nearby in a separate building, 88 feet 8 inches x 165 feet 4 inches, is housed the skull cracker, the floor area of which is commanded by a 40-ton crane.



Open-hearth mold yard at Gary works, showing ingot molds on cars, and 25-ton crane. Skullcracker building is in the left background

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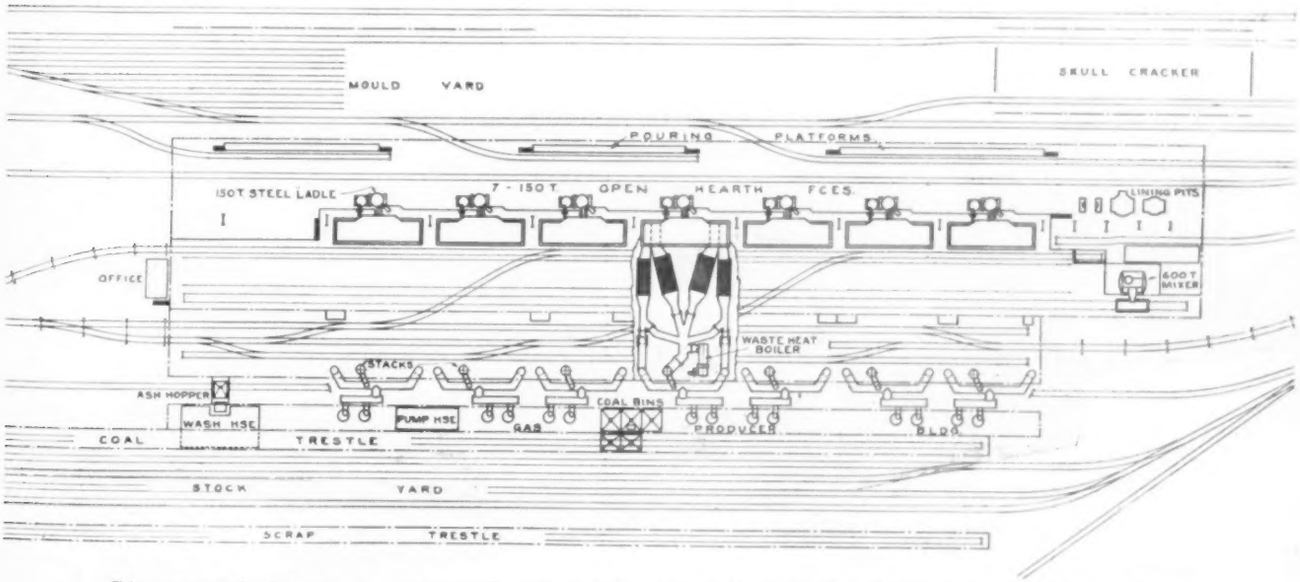
The second and concluding installment of this article will describe the new wide flange beam mill installed at the South works of Illinois Steel Co., and will be presented in an early issue of STEEL.

Committee Seeks Approval Of Manhole Standards

A proposal for an American standard for manhole frames and covers containing recommendations for 13 types of frames and 7 types of covers to replace the thousands of types now in use has just been published by the American Standards association, 29 West Thirty-ninth street, New York. Since 1924 a technical committee has been working on the subject of standardization, and the present proposal has resulted from this study.

The demands of public utilities and municipal supply departments for innumerable designs and sizes of openings in the past has caused many difficulties in manufacture and replacement of frames and covers. In addition to designs and dimensions, the proposed standard includes specifications for the gray iron and carbon steel from which the frames and covers will be cast.

Copies of the draft are available from the American Standards association. The committee now is circulating a questionnaire to all concerned with production and use of the frames and covers to determine whether the recommendations are satisfactory.



Diagrammatic layout of new open-hearth installation at Gary works, showing seven 150-ton furnaces

Blocks Provide Neutral Atmosphere for Hardening

HARDENING of high-speed steel must be carried out in a neutral atmosphere if scaling, decarburization and carburization are to be avoided. With most high-speed steels these objectionable factors are encountered separately in the order named as the furnace atmosphere is enriched with carbon bearing compounds or gases. There is a critical point between the objectionable conditions of scale and decarburization, where a sudden change occurs; and also a neutral point between decarburization and carburization. Thus it appears evident that the latter point is the most desirable furnace atmosphere for hardening.

Artificial Atmosphere

To provide these conditions the Sentry Co., Taunton, Mass., is manufacturing Sentry Diamond blocks, rectangular in shape with a hollow interior into which the steel may be placed, the entire unit being placed in a muffle and then in the furnace. The blocks are composed of a carbonaceous compound which gradually generates a gas to produce an artificial atmosphere between carburization and decarburization when heated in a furnace at about 2350 degrees Fahr. The neutralizing compound is not chemically active and will not attack the materials used in furnace construction.

The time element is not critical and high-speed steel tools can be given an ample soaking period to assure maximum hardness. Special high-speed steels containing cobalt or molybdenum can be hardened easily in these blocks, without decarburization, it is claimed.

The blocks are manufactured by a special molding process with a slotted opening to accommodate the tools. Various sizes are provided, which should be selected in accordance with the size of the tools to be heat treated, and not the size of the furnace. To protect the outer surfaces of the blocks, they are inserted in silicon carbide muffles, which are supplied by the Sentry company.

Steel Placed on Trays

Although the atmosphere in the block is neutral the material of which it is composed is slightly carburizing and a piece of high-speed steel in physical contact with the block will be carburized slightly at the point of contact. For this reason it is desirable to place the high-speed steel tools on a tray in such a position that they cannot come in contact with the block. Flat refractory or metal trays are provided for this purpose. A further refinement which serves to insure against diluting gases entering the block is a specially shaped tray with a baffle at the front. The accompanying illustration shows several sizes of blocks, with and without muffles. Insets show the assembled muffle, block and tray, and the special refractory tray with baffle.

Furnaces used in connection with the block method of hardening high-speed steel preferably should be electric, although suitably designed fuel-fired furnaces, of ample size and capable of maintaining correct temperature constantly, can be used.

Small tools generally are batch hardened and removed on the supporting tray for quenching. When large tools are handled with tongs, the tray may be left in the block. Long tools may be suspended in a vertical position, the tray omitted.

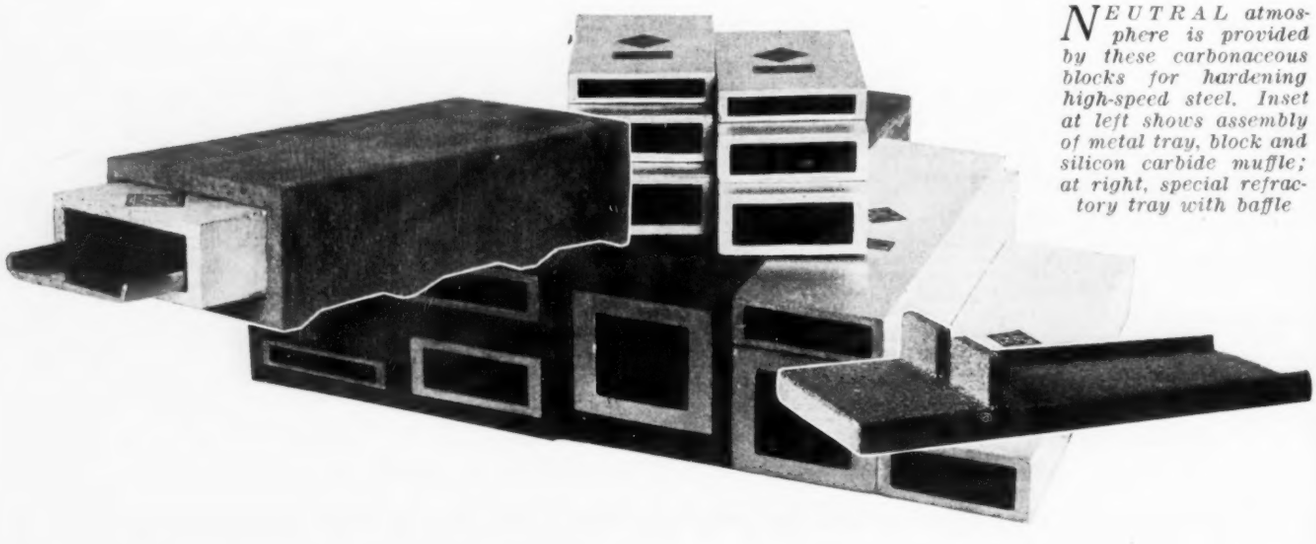
Average life of the block is about three working days. There is no deterioration of the chemical composition of the blocks with use, because of heating, cooling or time. They can be used 30 hours consecutively, or can be used for short intervals at different periods until they are consumed to such an extent that they lack the physical requirements to perform the work.

Production capacity of the blocks varies. A manufacturer of taps hardens about 240 3/16-inch taps per hour in the smallest size block, with outside dimensions 1 x 4⅜ x 6 inches. This amounts to over 7000 taps during the life of the block. As the hardener places about 16 taps in the block at a time and heats this load 4 minutes he can handle several blocks at the same time, showing a substantial saving in labor cost as well as in improved tools and less spoilage.

The blocks are manufactured in six standard sizes, the largest being 4 x 4⅜ x 16 inches in outside dimensions, the slot being 2⅝ inches high and 2⅞ inches wide.

To Discuss Sheet Mills

The combustion engineering division of the Association of Iron and Steel Electrical Engineers will hold an all-day technical session Thursday, March 24 at Ohio hotel, Youngstown, O. Many of the subjects to be discussed are of vital economic interest, one in particular "Sheet and Tin Mill Practices," starting with continuous furnaces, then mechanical processes and finally the electrical developments, all of which, it is claimed, will save as high as $5 per finished ton.



NEUTRAL atmosphere is provided by these carbonaceous blocks for hardening high-speed steel. Inset at left shows assembly of metal tray, block and silicon carbide muffle; at right, special refractory tray with baffle

After a lengthy campaign no excessive wear was noted on the roof span, the central part averaging about 9 inches in thickness; at the ends about 6 inches

Open Hearth Establishes Unusual Production Record

DETAILS concerning the construction and operation of an open-hearth furnace of the Laclede Steel Co. at its Alton, Ill., plant offer interesting data to steel plant operators in view of the unusual record in number of heats established recently by this equipment. The furnace is of 100-ton capacity and was built in 1929 from the design and specifications of the Arthur L. Stevens Corp., Chicago, covering insulation, burners and combustion control. It employs oil as fuel and an all-cold charge, requiring about 10 hours per heat.

Insulated Brickwork

The furnace has a sloping backwall with vertical steel construction. Brickwork on the back and ends is enclosed in a steel shell as also are the checker chambers, so that the furnace both above and below the floor is surrounded by such an enclosure, while the brickwork is insulated.

Three campaigns have been made on the furnace since the first heat was tapped May 11, 1929, and 1746 heats were run during the period. The third campaign gave the best results, providing 676 heats and a total output of 66,000 tons of steel. After the second campaign the furnace was rebuilt from the floor level and operations were resumed, the first heat being tapped Dec. 21, 1930.

The entire roof from end to end first was grouted with Firebond and then completely insulated with approximately 4 inches of a special mineral wool insulation. The roof was 15 inches thick and had 18-inch ribs, insulation having been laid across the tops of the ribs. After making 400 heats it was necessary to renew the front wall, end seals and replace the monkey walls, 276 more heats resulting without roof repairs.

General construction of the furnace lining consisted of use of Star silica brick above the floor line, except the front and back wall up to the slag line, which were of magnesite brick. Chrome brick were were on the slopes, Metalkase magnesite brick in the heel of the ports to a depth of about 30 inches from the top of the bridgewall, and chrome brick in the bulkheads. The checker depth was about 20 feet set on 5 feet of rider wall. On the upper 4 feet of the checkers Star silica brick was used, the remainder consisting of second quality, fireclay brick. The various refractories mentioned were supplied by the Harbison-Walker Refractories Co., Pittsburgh.

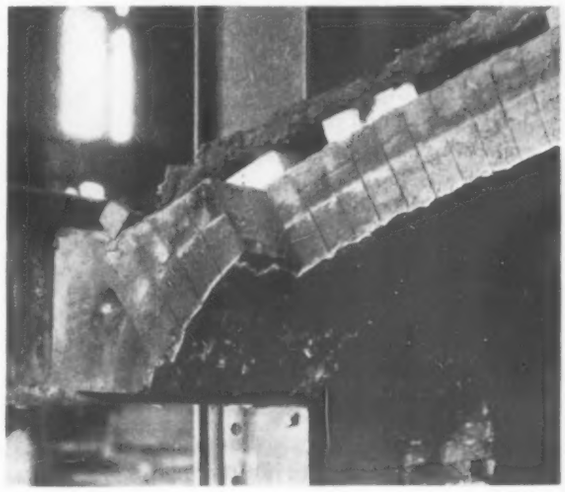
When the furnace was taken off, the roof still was in excellent condition as also was the balance of the furnace, the shutdown having been caused by the fact that the checkers were clogged with a coke formation resulting from the oil used for firing. The central part of the roof, extending as far as the end doors, averaged about 9 inches in thickness and there was no excessive wear along the skews either at the front or back wall. The brick thickness of the roof at the ends averaged 6 inches. The front wall was in excellent condition with an average thickness of 10 inches of brickwork still remaining. After removal of the coke formation the top checkers showed considerable wear to a depth of about eight brick, the remainder being in fairly good condition.

Results Are Noted

Stamping, structural and special forging steels comprised the principal grades produced by the furnace, although common soft steels and special carbon steel also were made. The following table shows results for a representative month's operations as reported by the Laclede Steel Co.:

Number of turns	60
Number of heats	66
Hours per heat	10.55
Tons produced	6629
Tons per heat	100
Tons per hour	9.21
Gallons of oil per ton	24.3
Per cent of yield	92

For the total of 1746 heats consumption of oil per ton of steel produced was 27.3 gallons. Consumption of other materials per ton of steel was as follows: Brick, 7



CLOSEUP view of roof in process of demolition after a campaign, showing minimum wear at the skew

pounds; magnesite, 5 pounds; chrome, 5 pounds; granite, 20 pounds; and raw dolomite, 38 pounds.

J. W. Gething is plant superintendent for the Laclede Steel Co. at Alton.

In general practice in operation of the Stevens furnace, if it is desired to melt down a heat with a certain carbon content, one-third less pig iron can be used in the charge and scrap substituted. The lower carbon content of the high scrap charges gives no trouble in working down the heat because of the nonoxidizing atmosphere and for the reason that less carbon is oxidized, less iron oxide is formed. As a result an increase of fully 3 per cent and sometimes more in yield of steel in the ladle from the metallic content of the charge is brought about, it is claimed, in addition to a reduction in amount of lime required to keep the slag basic. For the same reason a saving in manganese and other additions is effected, accompanied by a decline in amount of oxide inclusions.

At Alton the practice has varied from high-grade deep stamping steel using pig iron in the charge to structural grades using no pig iron but substituting cast-iron scrap. Some heats have been run with coke and at other times special high-carbon steel, axle steel, alloy steel, skelp, etc. Part of the time the practice has been to use burnt lime entirely, while over a considerable period limestone has been employed.

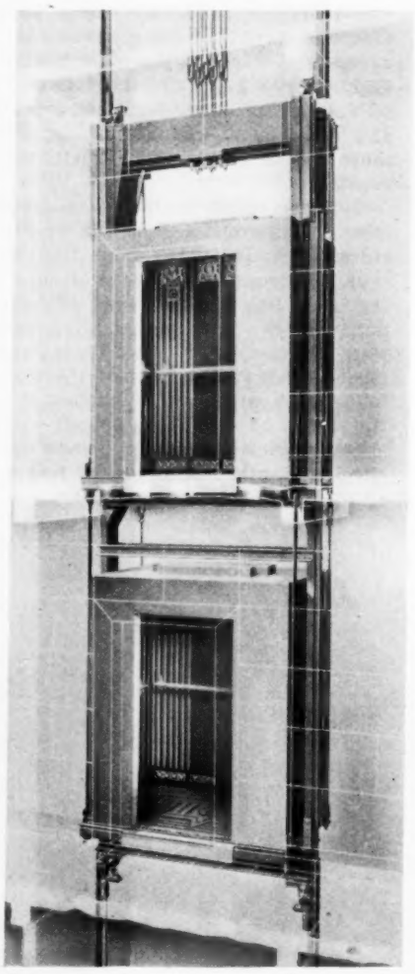
Double-Deck Elevators Save Floor Space in New Skyscraper

THIRTY-SIX miles of hoisting rope and cable were required for installation of double-deck elevators in the new 67-story office building of Henry L. Doherty and Cities Service companies in lower Manhattan, New York. Constituting the latest development in vertical transportation, eight of these high-rise double-deck Otis-type elevators will serve all floors from the twenty-ninth to sixty-third, lower floors being served by seven cars running from the sixteenth to twenty-ninth floors, and eight additional cars serving the first 16 floors. Escalators, operated by motors on a gear and link-chain system will handle rush hour crowds between the sixth floor and basement. Use of the double-deck elevator system is claimed to have resulted in a saving of 24,000 square feet of floor space, due to the need for fewer shafts.

13 Miles of Conduit

Counter rails guiding the large double-car units through the shafts, if extended end to end, would reach nearly 7½ miles, while about 690 miles of covered wire and 13 miles of conduit were required for electric power and control systems for the new elevators.

Each double-deck car, as shown in the accompanying illustration, is of sheet steel, comprising two separate compartments mounted in a single car frame, 25-feet in height, and driven by a single hoisting motor. Control is basically the same as for the standard signal control elevator. Both compartments are loaded at the same time, one from the ground floor, and the upper cab from the first floor. Passengers are discharged at the upper floors at the same time, one compartment serving only odd or even numbered floors, and the other only the alternate floors. Capacity of each compartment is 2500 pounds.



Double-deck elevator compartment assembly showing phantom corridor walls

The double-car unit is lifted by means of eight special steel traction hoisting ropes, any one of which is more than capable of carrying the combined load of both compartments. Clamp car safeties, comprising two sets of powerful rail-gripping jaws, are mounted at the top and bottom of the safety frame. Many special operating devices, including speaking tubes, emergency trap doors and pilot lights, were necessary to co-ordinate the starting and stopping movements of the two cabs.

Discuss Lubrication at High Temperatures

The use of colloidal graphite as a high-temperature lubricant is discussed in a bulletin just issued by the Acheson Oildag Co., Port Huron, Mich. This bulletin, No. 130.3, states that ordinary lubricants either lose their viscosity or chemically decompose under high heat, whereas the graphoid surfaces formed with the use of colloidal-graphited lubricants possess a low coefficient of friction, resist oxidation and act as protective coatings on the friction parts.

Subjects discussed in the bulletin are facts about graphite, forms in which colloidal graphite may be obtained and uses of the material. Among applications mentioned are baking and enameling oven chains, kiln and annealing cars, die casting machines and glass making machinery.

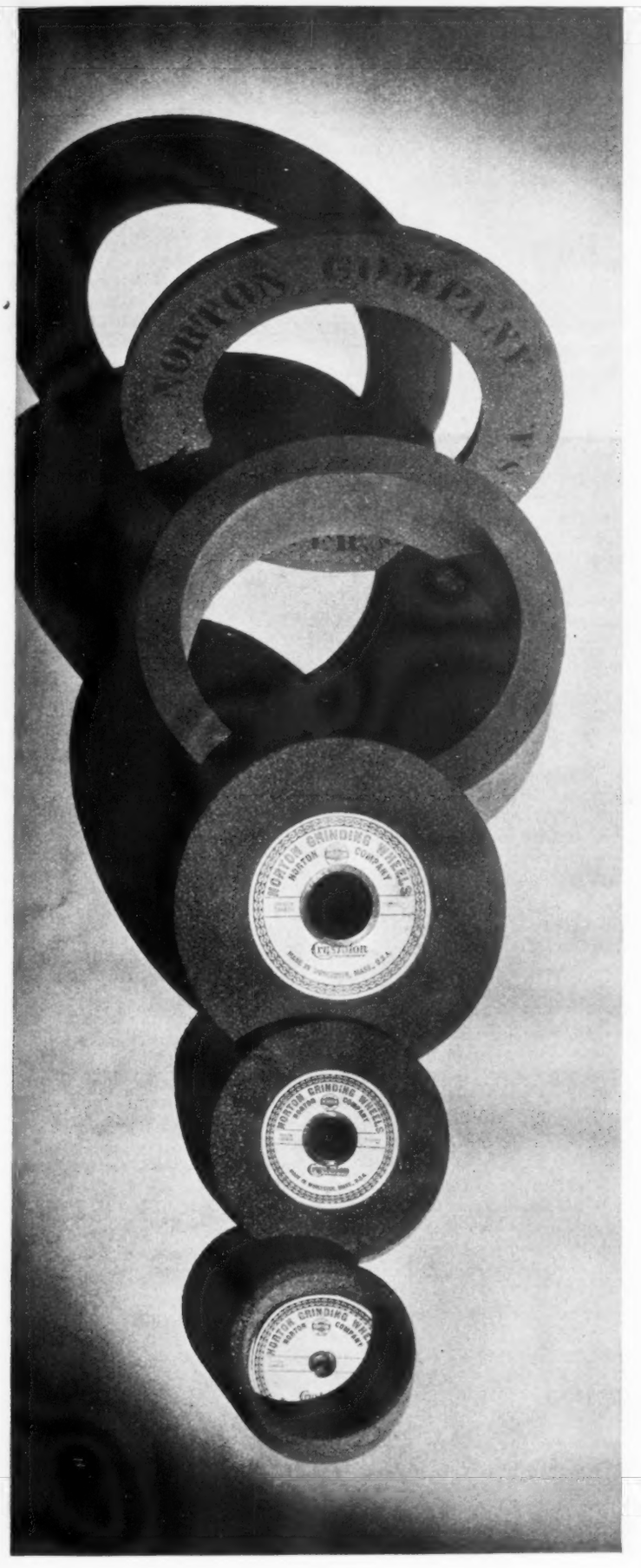
New Simplified Practice For Forged Tools Issued

A second revision of the simplified practice recommendation on forged tools has been published by the division of simplified practice, department of commerce, Washington. Issued Jan. 4, it is designated R17-31 and supersedes R17. Copies may be obtained from the superintendent of documents, Washington, for 15 cents each.

Gear Makers Schedule Meeting in Cleveland

The American Gear Manufacturers' association will conduct its sixteenth annual meeting in Hotel Statler, Cleveland, May 12-13, the meeting to be preceded with a meeting of the executive committee on May 11. T. W. Owen, 3608 Euclid avenue, Cleveland, is secretary of the association.

For Grinding Tungsten Carbide and Tantalum Carbide



THESE hard cutting metals are different from the average cutting tool. They are *not* steels nor steel alloys. Special wheels must be used to grind them. And Norton wheels—Crystolon abrasive plus Controlled Structure—specifically meet the need.

Crystolon abrasive

Sharp, hard silicon carbide.

Controlled Structure*

Accurate regulation of the grain spacing to meet varying conditions — different types of the cutting carbides; different kinds of grinding, such as cylindrical, surface, form and off-hand.

This accurate varying of the wheel structure to meet varying conditions is a Norton feature that is especially important with these new "superhard" cutting metals. If the wheels are to show maximum economy with fast cutting action they must be very accurately fitted to their job—with an accuracy possible only when structure is controlled.

*Patents pending

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NORTON
GRINDING WHEELS

New Data on Alloy Steels Brought Out by Research

RESULTS in a series of studies with iron-carbon-manganese alloys of selected composition up to 1.5 per cent carbon and 15 per cent manganese as to constitution after equilibrium had been established at a variety of temperatures were given in a joint paper with charts by E. C. Bain, E. S. Davenport and W. S. N. Waring, research laboratory of the United States Steel Corp., presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers in New York, Feb. 15-18. X-ray crystallograms were used to establish the curves in conjunction with microscopic observations and care was exercised to insure equilibrium, generally realized only after long periods at temperature. Alloys used in the tests were furnished by the Illinois Steel Co.

Effect of vanadium in high-speed steel was discussed by A. B. Kinzel, chief metallurgist, Union Carbide & Carbon Research Laboratories Inc., New York, and C. O. Burgess, metallurgist associated with that staff. Proper control of carbon content is important in the increase in cutting efficiency in some steels, while in other analyses the carbon should be increased approximately 0.2 per cent for each 1 per cent increase in vanadium for best results in forgeability and cutting efficiency. Experiments also indicate that vanadium and carbon increased in proper ratio also increase the cutting efficiency of cobalt high-speed steels. Results of tests on a wide variety of steels were given.

Iron-Aluminum Alloys

Iron alloys with a small percentage of aluminum show an improvement in oxidation-resisting properties as compared with ingot iron, according to N. A. Ziegler, research engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., who discussed resistance of iron-aluminum alloys to oxidation at high temperatures. At 4 per cent aluminum the improvement becomes appreciable in its resistance and alloys with 6 per cent aluminum appear only slightly inferior to nickel-chromium alloy. Carbon content has little, if any, effect on the oxidation-resisting properties of the alloys.

Nitrified special steels, some containing chromium, aluminum, titanium and other alloys become black, but do not rust to form red hydroxide of iron in distilled water, according to Shun-ichi Satoh, research staff, Mitsubishi Zosen Kaisha Ltd., Japan. His paper covered electrochemical potentials of nitrified steels. In measuring the single potential of various nitrided steels, a porous iron may be produced in the outer layer of steel as the result of nitrification and of immersion in ferrous sulfate solution, according to the author of the paper. In saturated copper sulfate solution, nitrified special steel has a positive potential of about 0.2 volt.

The Howe Memorial lecture was delivered by Edgar C. Bain, metallurgist, United States Steel Corp., Kearny, N. J., on the subject of "Rates of Metallurgical Reaction in Solid Steel." Mr. Bain presented his most recent evidence from a series of studies showing that widely different alloy steels are fundamentally similar and comparable in their behavior but sharply distinguishable one from another in respect to the time required for their response to heat treatments.

Cites Proof of Views

In support of this view, nonmagnetic steels were exhibited in the condition of full magnetism and with properties comparable to plain carbon steel; this represented an extreme case although its concept was brought forth some time ago in connection with the valuable high-speed steel.

Mr. Bain pointed out that one familiar steel responds to heat treatment a million times as fast as another well-known alloy steel. The establishment of this variation in steel, he declared, clarifies the matter of the function of common alloy elements added to steel and is thought to offer one rational basis for evaluating the engineering advantages of the many present-day alloy steels.

The lecture was illustrated by photographs of unique steel structures, taken at magnifications as high as 4000 diameters by the use of a technique similar to that described by F. F. Lucas in the 1931 Howe lecture, and employing the Zeiss microscope.

Impact strength of die-cast zinc-base alloy varies with temperature, the alloy being brittle at low temperatures, toughening as it rises and reaching a maximum somewhere below the critical temperature of decomposition of the beta phase, according to Bert E. Sandell, Stewart Die Casting Corp., Chicago. Two alloys were used in the tests showing the effect of temperature upon the Charpy impact strength of die-casting alloys. Those used were zinc-base and aluminum-base alloys. In two die-cast aluminum-silicon alloys no appreciable variation was noted in impact strength from 0 to 500 degrees Fahr.

Cost of sintering and the relation of such cost to location and type of ore was discussed in a paper by Perry G. Harrison, general manager, Evergreen Mining Co., Ironton, Minn. Mr. Harrison noted progress in the reduction of ore-sintering costs at Buffalo recently where Mahoning ore is screened and the fines mixed with flue dust having an excess carbon content sufficient to sinter a large percentage of such ore fines.

Advocates Use of Sinter

Robert McClurkin, manager, Tonawanda Iron Corp., North Tonawanda. N. Y., discussed sinter in blast furnace burdens, claiming that the use of burdens containing 15 to 40 per cent sinter, with an average over two years of 30 per cent, facilitates the use of high blast temperatures. With each increase in the sinter in the furnace burden, it was found possible to increase blast temperature accordingly.

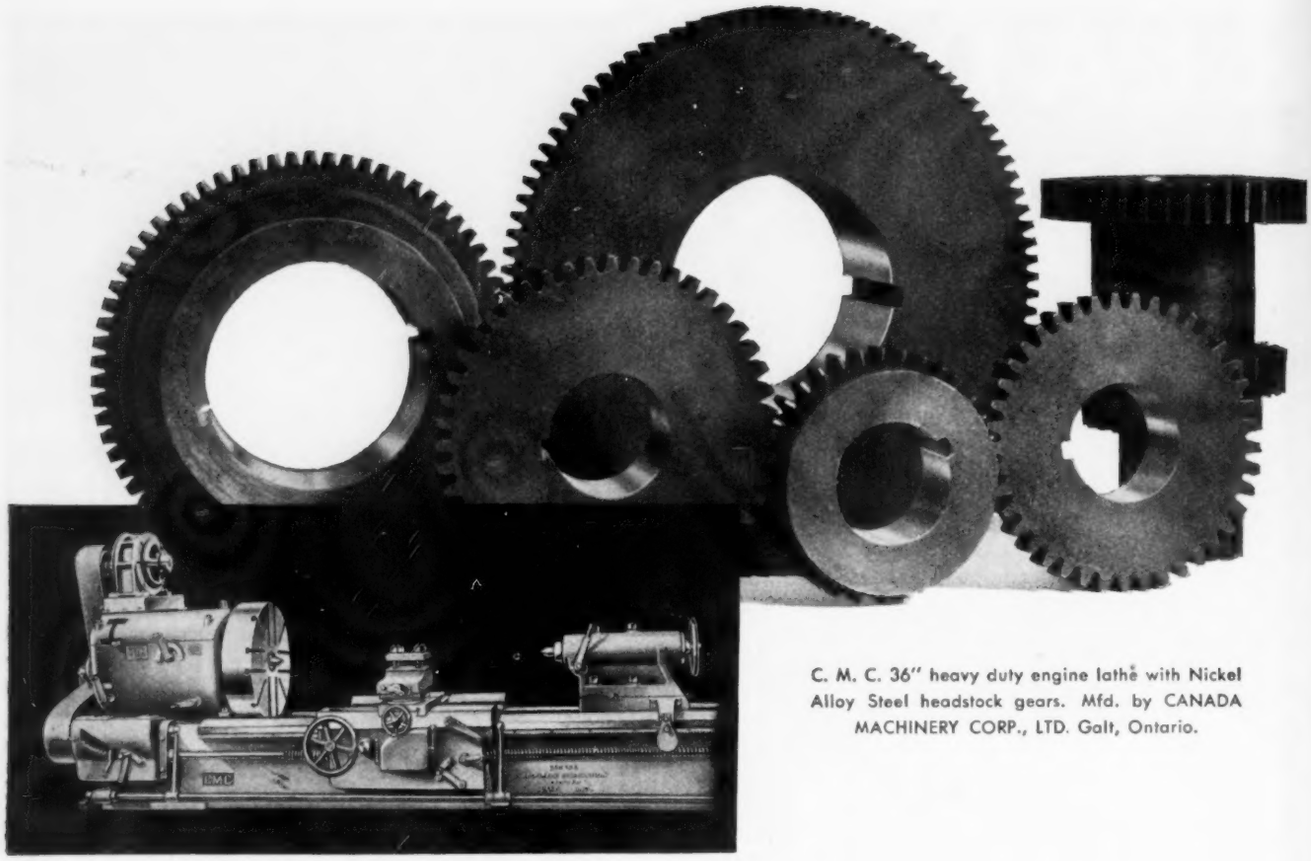
Use of this sinter provides a burden which is much more readily smelted and is more easily handled than a burden composed of raw ore, according to Mr. McClurkin. With each increase in sinter with the same amount of wind, an increase in daily tonnage has resulted, due in part to increased amounts of sinter, enriching the burden and the reduction of the flue dust produced by the furnace.

Air Conditioning for Worker Comfort Is Discussed

Industrial workers can accomplish four times as much work in a temperature of 100 degrees Fahr, when the relative humidity is 30 per cent than when it is 100 per cent, and can perform at maximum efficiency only between the temperature limits of 40 and 75 degrees Fahr., according to facts quoted in a recent report issued by the Policyholders Service bureau of Metropolitan Life Insurance Co., 1 Madison avenue, New York.

The 20-page pamphlet, entitled "Air Conditions and the Comfort of Workers," and available upon request, discusses methods of measuring various physical properties of air, systems for conditioning air, effects on individuals of an unbalanced ratio of temperature and humidity, removal of excessive heat and moisture, and a number of other timely subjects.

READING
PRODUCES
PIPE
CASING
TUBING
NIPPLES
COUPLINGS
BOILER TUBES
BLOOMS
BILLETS
BAR IRON
SUCKER RODS
CUT NAILS
IRON CASTINGS
SUGAR CANE MILLS
COTTON COMPRESSES
HEAVY MACHINERY
MAGNETITE ORE
PIG IRON
BITUMINOUS COAL
SHEETS
PLATES
KNOBBLED CHARCOAL IRON
READING IRON COMPANY
PHILADELPHIA, PA.



C. M. C. 36" heavy duty engine lathe with Nickel Alloy Steel headstock gears. Mfd. by CANADA MACHINERY CORP., LTD. Galt, Ontario.

CANADA MACHINERY CORP. *says . . .*

"We have not had a single broken gear in headstocks since adopting Nickel Steel"

● The C. M. C. 36-inch heavy duty engine lathe is a "bear for punishment." Just read what the manufacturers say:

"The headstock drive gears of this lathe are of Nickel Steel, heat treated, S. A. E. 2345. Since adopting this we have not had a single broken gear in headstocks. In one case recently a steel washer which encircled the side of one gear came loose and was chewed up by the gear teeth without failure on their part. By the use of Nickel Steel we have been enabled to cut down the size of the gears considerably with no loss in strength and wearing qualities."

Other equipment manufacturers in other industries that use heavy duty gears, could give you additional illustrations of the remarkable strength, toughness and wear-resistance of Nickel Alloy Steel. Invariably, the verdict is: "Nickel Alloy Steel performs better longer." Write our engineers for recommendations regarding suitable Nickel Steels for your requirements.

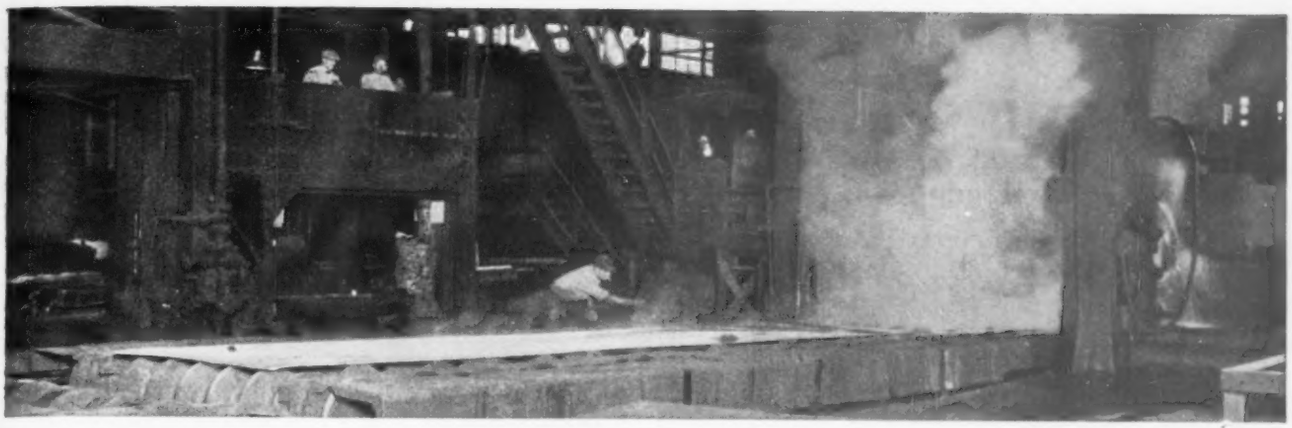
INCO NICKEL — Dependable materials are the best assurance of dependable performance

Send for Bulletin No. 2, "Physical and Mechanical Properties of Nickel Steels."

Nickel
ALLOY STEEL
PERFORMS BETTER LONGER

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Miners, refiners and rollers of Nickel. Sole producers of Monel Metal

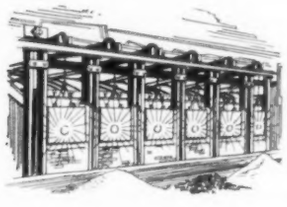


PROGRESS IN STEELMAKING

HANDLING bosh tanks from the pickling vats to the tinning machines at a plant in the Pittsburgh district now is being done by a special electric lift truck and one driver, performing the same amount of work formerly requiring a crane operator and two helpers. The lift platform is split to permit the truck to straddle the tank and the lifting arms engage angles welded to the sides of the bosh. The truck is equipped with a cover fitted with a gasket and suspended from a set of compression springs. When the platform is lifted the top of the bosh is raised against this cover gasket, a tight fit being insured by the compression of the springs. This arrangement has eliminated splashing and has greatly improved working conditions.

♦ ♦ ♦

Buffing the necks of rolls used in the finishing stands of a continuous rod mill in the Pittsburgh district before installing them in the wooden or lignum-vitae bearings, reduced the starting torque of the mill and increased the life of the bearings 50 per cent. The average life of the wooden bearings used on this mill is 31 times the life of the bearings formerly employed.



AN OPEN-HEARTH furnace operating on cold metal practice is reported making 120-ton heats in less than 11 hours from tap to tap with a fuel consumption slightly in excess of 4,000,000 B.t.u. per ton of metal. Natural gas, fired through side burners at about 1 pound pressure, develops a low velocity but rather high luminous flame.

♦ ♦ ♦

Application of wear-resisting alloys in the form of welding rod to water-cooled gas producer pokers used at a steel plant in this country has tripled their campaign, compared with steel pokers formerly used.

MOLDS to be coated with a graphite wash by spraying should be at a temperature of about 300 degrees Fahr. to facilitate the evaporation of the water, according to a manufacturer who stresses the importance of keeping the graphite mixture agitated while the coating is being applied to the interior surface.

♦ ♦ ♦

Manufacture of tin plate in longer lengths is to be undertaken by a large sheet and tin plate producer. A single stand of cold rolls equipped with a tension coiler now is being installed. Buckled and coiled stock will be obviated by maintaining tension on the strip being fed to the rolls.

♦ ♦ ♦

High-sulphur bessemer steel has been developed by a Pittsburgh steelmaker for the purpose of increasing the production in high-speed automatic machine work. Tests disclose an increase in machine production of 16 to 32 per cent over standard bessemer screw stock.

♦ ♦ ♦

Use of blast furnace gas for underfiring a battery of by-product coke ovens at a plant in the Chicago district has decreased the coking time from 14 to 12.9 hours. Based on operating results, underfiring the ovens with this gas promotes a more uniform distribution of heat to the walls and consequently the coke; gives a greater uniformity of temperature to the coke as pushed, and of the size of the pieces; affords an improvement in the smoothness of operation of blast furnaces using the coke; and effects a greater uniformity of the thermal value of the blast furnace gas, resulting from easier stack operation.

♦ ♦ ♦

A new principle has been incorporated in the design of a gate valve for boiler-feed water and blowoff lines and water systems. Tight sealing of the valve is effected by a lubricant introduced between the seating surfaces by pressure guns. The film of lubricant not only protects the seating surfaces from corrosion but dislodges gates which have become wedged by long periods of disuse.

♦ ♦ ♦

Sizing of iron ore, which has been practiced for several years by the Columbia Steel Corp., Provo, Utah, is receiving more consideration as a means for decreasing size segregation at the stock line, according to an authority on blast furnace practice.

AN INTERESTING development has occurred in the gas welding industry with the discovery that for welding of particular metals, an unbalanced flame will give better results than a balanced flame with a marked reduction in costs.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Flexible Shafting

Flexible shafting and its adaptation to various types of drives, by Harold B. Veith, in Machine Design, February, 1932, p. 40, 4 pp., 8 illusts, 2 tables.

Although flexible shaft drives offer one of the simplest means of transmitting power between two points not in the same plane, their success is dependent on whether certain basic rules have been observed in laying out the applications. Radius of curvature, size, torque capacity at different speeds, all bear definite relation to each other and must be given close consideration. The shaft should offer maximum resistance to twisting under load with minimum resistance to bending and at the same time have as little internal friction as possible.

A complete flexible shaft assembly comprises four basic parts, namely, the driveshaft proper, driveshaft ends, the casing and the casing ends. Special grades of steel wire of high tensile strength are used in the driveshaft. Two or more superimposed layers of wire with or without a single strand of wire in the center make up the typical shaft.

—STEEL, 2-29-32

Expansion Fits

Making expansion fits with liquid air, by E. V. David and W. S. Parr, in Machinery, November, 1932, p. 189, 4 pp., 2 illusts.

The expansion fit is new in the mechanical field, the term describing the method of assembling a pin, shaft, or bushing in a hole of slightly smaller diameter by cooling the inner member with liquid air so that it will contract sufficiently to enter the hole. While the process is not recommended where ordinary shrinkage fits can be made, there are numerous cases in which expansion fits can be made advantageously and economically. There are also cases in which heat cannot be employed.

Expansion fits are good practice when the outer member is large and heavy compared with the inner member, or when the heating of the parts might cause cracking or warping. Liquid air expansion fits also can be made where heat would injure rubber parts, insulation or other materials attached to one of the members, or where a suitable furnace is not available for heating the work. Liquid air has a capacity for withdrawing 200 B.t.u. from parts immersed in it, per liter (1.057 quart) of liquid evaporated.

—STEEL, 2-29-32

Heat-Resisting Alloy

A recent addition to the heat-resisting alloy steel group—NCT3—by John L. Everhart, in Power, Feb. 2, 1932, p. 174, ¾ pp., no illusts.

A new heat-resisting alloy iron recently has been introduced, known as NCT3, containing a larger proportion of chromium and nickel than the familiar 18-8 alloy. Chromium ranges from 23 to 27 per cent, while nickel varies from 17 to 21 per cent. The material is obtainable both in cast and wrought forms with the same analysis, and therefore may have wide application in the field requiring metals for elevated temperature service. It cannot be hardened by heat treatment; however, mechanical working causes a stiffening of the material with an increase in tensile strength and a decrease in ductility. The alloy is restored to its softest and most ductile form by heating to a high temperature and either quenching in water or cooling rapidly in air. NCT3 is being produced in this country by several alloy steel manufacturers. Chemical analysis and physical properties are tabulated.

—STEEL, 2-29-32

Tank Welding

Automatic arc welding in a modern tank shop, by R. B. Lincoln, in Machinery, February, 1932, p. 401, 5½ pp., 8 illusts.

A large manufacturer of electrical equipment has erected a building 400 feet long by 75 feet wide for welding of tanks for electric circuit breakers. Three aisles run the length of the building to permit a straight-line flow of the work. Tanks from 48 inches to 10 feet in diameter and up to 16 feet in length are assembled, as well as a variety of sizes in the smaller tank units.

Automatic welds were found to be more uniform and less likely to leak than manual welds, owing to the fact that the machine holds a more constant arc than the most skilled hand welder. Furthermore, automatic welds are made at higher speed, because the work is not interrupted on account of fatigue of the operator or the necessity of changing electrodes. An additional advantage is a smoother weld. A number of special welding machines are operated in this shop, including several inclined types, universal machines for welding both longitudinal and circumferential seams, horn-type machines which lay two beads simultaneously, and others.

—STEEL, 2-29-32

Stainless Steel

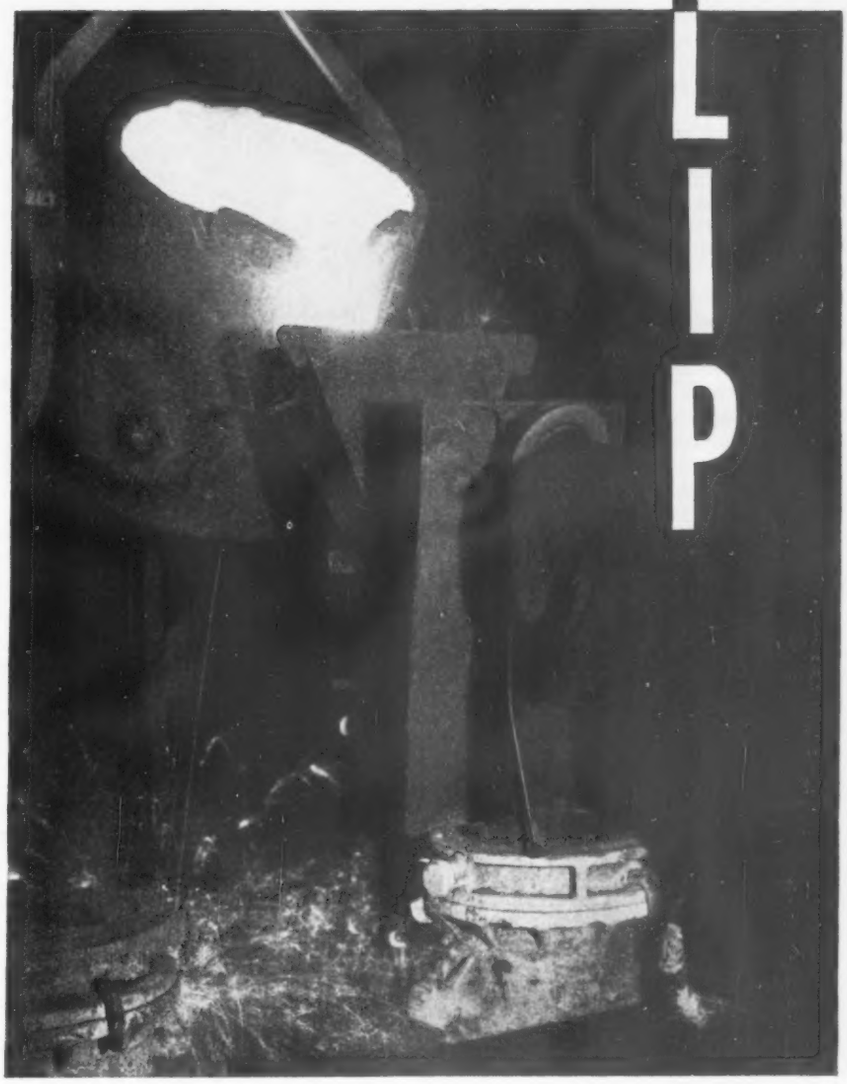
Use of stainless steel in electrical manufacturing, by W. C. Hirsch, in Electrical Manufacturing, February, 1932, p. 30, 3 pp., 1 illust.

In stainless steel, by which term a comprehensive class of chromium steels rather than any one definite alloy has come to be known, the electrical manufacturer is afforded a material that will retain its original brightness under the most trying atmospheric conditions. In addition to its corrosion resistance this steel possesses numerous other meritorious properties that within the last few years have come into practical application in a wide range of parts. Stainless steel is available in all the conventional forms in which ordinary steel is marketed for the convenience of the industrial fabricator. More important, however, has been the gradual reduction in the price of stainless steel, certain analyses being quoted today at 33 1/3 per cent less than they were three years ago, their use being made still more economical by reason of more simplified finishing methods for the steel.

Beyond its application to numerous domestic appliances stainless steel finds wide utilization in the electric power plant, for such parts as turbine blades, pump shafts, mountings for gate, globe, blow-off and other types of valves, as well as in gages, thermometers and other recording and measuring instruments for power plant use.

—STEEL, 2-29-32

There's many a SLIP



Unless the castings you buy are fully up to their job, they can cause endless trouble. Guard against imperfect castings by demanding Superior Charcoal Iron in the mix.

THERE'S many a slip can occur in the production of the fine, high quality finished product you are striving to turn out. And a great percentage of these slips which cost you and your customer time and money are due to imperfect castings.

But there's an easy way to guard against defective castings —and the trouble they cause. Merely specify a small amount of Superior Charcoal Pig Iron in the mix when you order your castings.

Then your castings will be stronger, denser, tougher, easier to machine, better in every way. Your foundry will have less scrap loss. And you will turn out a higher quality finished product.

Don't forget to include in every casting specification this simple sentence: "All castings to contain not less than 15% to 20% Superior Charcoal Pig Iron."

SUPERIOR CHARCOAL IRON CO.
Grand Rapids, Mich.
Debevoise-Anderson Co., Inc., *Eastern Representative*
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YOUR CASTINGS . . . *made with Charcoal Pig Iron have* . . . GREATER DENSITY · ADDED TOUGHNESS · MORE STRENGTH · LESS SCRAP LOSS · GREATER UNIFORMITY · EASIER MACHINABILITY . . . *and you get higher quality finished products.*

Superior Charcoal Pig Iron

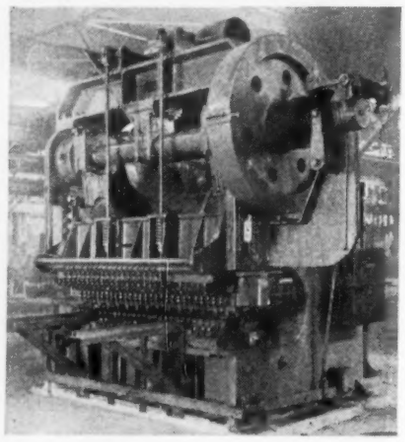
New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

Welding Used to Fabricate Multiple Punch

Baldwin-Southwark Corp., Eddystone, Pa., and Lukenweld Inc., Coatesville, Pa., have built jointly a large multiple punch of all welded steel plate construction, which recently was placed in operation in the shops of the Baldwin Locomotive Works at Eddystone, Pa. It is employed to rivet holes in aluminum sheets to go into locomotive cabs which are being built for the Pennsylvania railroad. Forty holes are punched at one stroke.

Aside from a few small gray iron castings, it is entirely of rolled steel construction. The side frames are of 5-inch steel plate, burned to shape and welded. The bearing bosses were cut out of heavy rounds and welded to the 5-inch side frames. They were then bored. The cross-bar which stiffens the back of the machine is a steel pipe with welded flanges and bolted to the side frames. Flat plate wings were welded on this pipe to form the motor base. This construction effected a marked saving in weight and in pattern cost; the certainty of homogeneity of metal in the side frames permits higher stresses with perfect safety. A natural corollary is reduced weight. Weight with punching attachments is about 78000 pounds. The unit is shown in column at right.



Multiple punch built for Baldwin Locomotive Works

◆

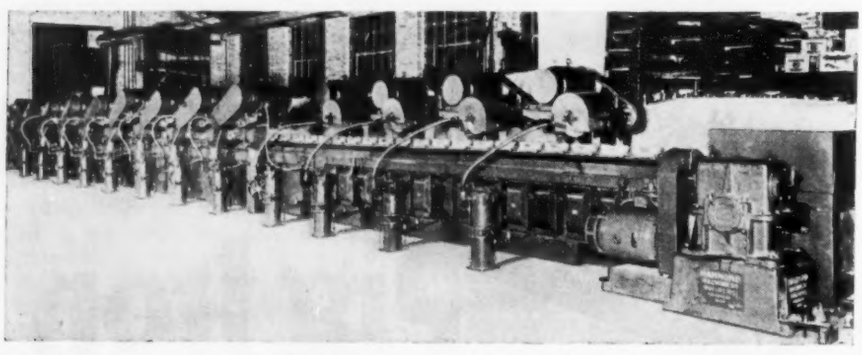
Unit Designed for Straight Line Production

Hammond Machinery Builders Inc., Kalamazoo, Mich., has announced an addition of a straight-line automatic polisher and buffer to its line of automatic polishing and buffing machines. Any type of work not requiring a rotating work fixture can be processed on this type of machine, and the wheel can be set to any angle from horizontal to vertical.

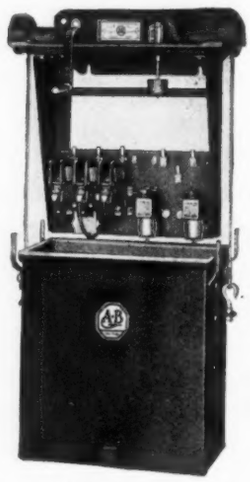
One of the features responsible for its good work finish and speed is the caterpillar type of conveyor unit used. Cast iron platens, which form the conveyor, are machined and are heavy and well aligned so that any type of fixture or adapter may be attached. This construction permits side as well as top polishing. Platens are mounted on hardened rollers, chain driven, and run on continuous rails. If desired, speed may be varied by use of a Hammond variable speed multi-V belt drive.

The machine shown in the accompanying illustration, is arranged for polishing and buffing the top and inside edge of hinge or ventilator door used on automobile hoods. Both the top and part of the inside edge of the hinge are polished and brushed in one pass across the machine. Nine hundred pieces are finished per hour. As shown, the polishing and buffing heads, of which there are 12 on this machine, are complete V-belt motor driven units. Each individual head is mounted on universal knuckles. Heads are supported by a vertical column which can be raised or lowered. Equipped with tilting adjustment, it is possible to move the wheel from a vertical to horizontal position.

Automatic composition feeders recognizable as the 12 cylinders at the front of the machine with flexible hose leading to the wheel, are a new development. Compressed air is employed to deliver the composition paste through a distributing nozzle to the wheel. Centrifugal force of the wheel, in turn, carries the composition to a fabric collector pad clamped to one side of the nozzle. This pad contacting with the wheel face applied a definitely controlled film of composition.



Straight line automatic polishing and buffing machine manufactured by Hammond Machinery Builders Inc. V-belt drives are employed in this installation



Allen-Bradley Explosion-proof starting switch

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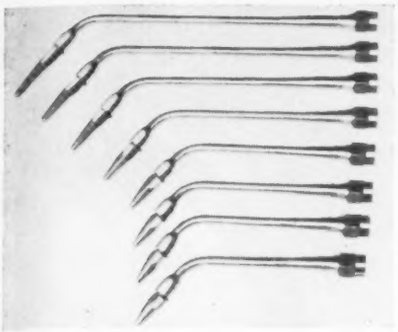
Switches Are Oil Immersed, Air Break Types

Allen-Bradley Co., 1311 South First street, Milwaukee, recently developed a line of explosion-proof, across-the-line starting switches of



Welding tip heads designed by Linde Air Products Co.

both the oil immersed and air break types. These units are used with squirrel cage and slip ring motors, on 3-phase or 2-phase 3-wire systems, as well as self-starting single phase motors, in oil refineries, chemical plants, mines and wherever flammable gases or vapors are likely to be present.

Enclosed in Cast Iron Cabinet

Maximum ratings are 25 horsepower at 110 volts, 50 horsepower at 220 volts, and 100 horsepower at 440-550 volts. When used with slip ring motors the switches are for primary control only. Oil-immersed switches are available with ratings of 50, 100 and 150 amperes. The oil tank maintains at least a 6-inch head of oil above the switch panel. An air-break type of switch is available only in the 50 ampere size. It is enclosed in a cast iron cabinet with hinged cover, machined to obtain a tight fit without gaskets. The cabinet is cadmium plated to resist corrosion. The switch is shown in the illustration on page 36.

All switches have two magnetic overload relays, and the contactors are equipped with copper-to-copper rolling type contacts as well as magnetic blowouts and arc shields.

◆

Welding Heads Equipped With Detachable Tips

Linde Air Products Co., 30 East Forty-second street, New York, has introduced a new series of welding heads with detachable tips for use with its type W-17 welding blowpipe. These will supplement the one-piece style heads for this blowpipe, so that the user may have a choice of two types.

The new series of tip heads, shown in the accompanying illustration, were developed particularly for pipeline welding and for production operations. They produce the same kind of flame as that facilitated by the one-piece welding head for type W-17 blowpipe. Sizes Nos. 6 to 13, inclusive, are available in the new welding heads.

One of the practical features of the recent design is the connection between the tip and the stem provided by the male thread on the tip which screws into the stem. Removal or replacement of the welding tip thus is facilitated easily.

◆

Develops Vertical Variable Speed Mechanism

Reeves Pulley Co., Columbus, Ind., has developed a vertical enclosed variable speed transmission which incorporates the standard internal operating unit and possesses all the utility of the horizontal design. The vertical

Reeves vertical variable speed transmission

unit, shown in the accompanying illustration, is better adapted for certain standard equipment installations, and for installations requiring less floor space for the operation of the speed control unit.

An outstanding feature of the new model is convenience in lubrication facilities. Complete lubrication is possible without removal of the cover section. All radial, shaft and thrust bearings are lubricated through force feed fittings located in exterior panels, while shafts, driving keys, and disk hubs are lubricated by means of force feed fittings in each end of the shaft extensions. From these fittings rigid copper tubes lead to the four radial shaft bearings, and flexible copper tubes to the four thrust bearings.

The vertical design may be equipped with electric remote control, electric automatic and mechanical automatic controls, and with motors, motor bases and other accessories for varying requirements of speed control. The motor base is adjustable in order that any stretch in chain or multiple V-belt drive may be taken up. For extreme reduction in speed, an auxiliary countershaft may be installed. This design is available in 10 sizes, covering speed ratios from 2:1 to 8:1 inclusive.

◆

Shovel-Crane-Dragline Is Made in Five Sizes

American Hoist & Derrick Co., St. Paul, is offering a new model shovel-crane-dragline, gasoline or diesel engine operated. Five sizes are available, namely, model 375—¾-yard; model 400—1 yard; model 425—1¼ yard; model 450—1½ yard; model 475—1¾ yard, all mounted on continuous chain crawler treads, with two speeds.

All sizes are newly designed, combining the latest features known in shovel manufacture. Compactness, simplicity of design, increased strength in all wearing parts, ease and convenience of operation, levers having "fingertip" control, are some of the outstanding characteristics of the new units. A view of the unit is shown in the illustration herewith.

New American Hoist & Derrick shovel-crane-dragline

To stand up at today's high speeds

put your trust only in GOOD alloy

ILLINOIS *alloy* STEEL

ALWAYS DEPENDABLE

Alloy steel is good when its quality is uniform in every bar of stock, in every ton of every heat. Controlled production of Illinois Alloy Steel is your assurance of controlled and uniform quality.

Illinois Steel Company

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

208 South La Salle Street, Chicago, Illinois

March Steel Outlook More Hopeful

Larger Demands Developing from Automotive Industry and Railroads—Operating Rate Holds at 25 Per Cent—Price Stabilization Spreading

STEEL activity was maintained last week at about 25 per cent—a rate which probably will also hold for this week—with considerable difficulty as actual specifications were the smallest of the depression period.

Considering all products, most mills entered less tonnage in February than in January. Since early in the month production has been easing gently, and while pig iron production probably has registered a slight increase over January, ingot output appears a standoff.

In every point except sentiment, February closes on a lower level than it began, but this intangible accrual of strength is the redeeming feature of the month. There is a strong undercurrent that March will initiate a mild rise.

Late this week it is expected the new Fords will be shown, and some of the paralysis which seized the automobile industry a month ago will pass. In barely perceptible stages track material and miscellaneous steel needs of the railroads are broadening. Although not yet reflected in fabricators' bookings, more building projects are developing; in western Pennsylvania and Ohio the number has doubled in four weeks.

The movement to stabilize prices has spread from heavy finished steel and sheets to bolts, nuts, strip and wire. As for months, the price situation is without influence on demand, but it is rapidly approaching a collision with Ford and foreign steel, the latter becoming a more menacing factor on the Atlantic seaboard as domestic prices advance.

February output of automobiles was probably close to the 119,344 units of January. By late March, Ford is expected to be sufficiently in volume production to start a spring rise. Ford releases for parts have broadened perceptibly. Chevrolet, which curtailed its February schedule from 53,000 units to 40,000 when the new Ford was delayed, has a tentative program of 50,000 for March and 65,000 for April. It, too, is experimenting with an eight.

By March 15 the New York Central will probably be in the market for about 75,000 tons of rails. Chicago, Milwaukee, St. Paul & Pacific will place 2000 tons shortly, 14,000 tons later, also 4000 tons of fastenings. Chicago mills have booked nearly 12,000 tons of fastenings in the past ten days.

The 20 per cent building trades wage reduction at Chicago has exerted a moderate stimulus on building operations. Structural shape awards for the week, 11,032 tons, including 4100 tons on the final award of the Mannheim road bridge, Chicago, compare with 12,791 in the preceding week.

Pig iron shipments for February were 10 to 20 per cent above January, and producers appear confident of further expansion in March. Due to the low rate of industrial operations scrap output has been greatly curtailed, receipts at Chicago being the lowest in two years, strengthening prices. Iron ore producers, hoping to maintain 1931 prices, almost daily look for the Ford inquiry.

Whether steel producers order a further reduction in wages and salaries hinges upon the success of the price stabilizing movement and the trend of business the next few weeks.

Steel producers fail to detect any direct orders for war material, but both combatants have been shopping in the United States for such supplies as anti-aircraft guns and tanks, and three manufacturers in the Chicago district are reported to have booked some war business.

The steadier price situation is reflected in STEEL's iron and steel composite, which remains at $29.53, and in the finished steel composite, holding at $46.82. The steelworks scrap composite is up 12 cents to $7.97.

Composite Market Averages

	Feb. 27	Feb. 20	One Month Ago (Jan., 1932)	Three Months Ago (Nov., 1931)	One Year Ago (Feb., 1931)	Ten Years Ago (Feb., 1922)
Iron and Steel Composite	$29.53	$29.53	$29.98	$30.61	$31.65	$32.86
Finished Steel Composite	46.82	46.82	47.28	48.17	49.42	50.29
Steelworks Scrap Composite	7.97	7.85	8.03	8.22	10.39	11.16

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Feb. 27, 1932	Jan., 1932	Nov., 1931	Feb., 1931
PIG IRON				
Bessemer, del. Pittsburgh	$16.76	17.26	17.76	18.51
Basic, valley	15.00	15.00	15.00	16.75
Basic, eastern del., eastern Pa.	15.75	16.00	16.00	17.25
No. 2 foundry, del. Pittsburgh	16.76	17.26	17.76	18.01
No. 2 foundry, Chicago	16.50	16.50	17.00	17.50
*Southern No. 2, Birmingham	11.00	12.00	12.00	13.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	15.76	16.01	18.26
Malleable, valley	15.50	16.00	16.50	17.25
Malleable, Chicago	16.50	16.50	17.00	17.50
Lake Superior, charcoal, del. Chi.	23.04	22.44	25.04	27.04
Gray forge, del. Pittsburgh	16.13	16.63	17.13	17.38
Ferromanganese, del. Pittsburgh	80.24	79.85½	89.79	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville furnace, ovens	2.25	2.25	2.35	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	29.00	30.00
Sheet bars, open-hearth, Pitts.	26.00	27.50	29.00	30.00
Billets, open-hearth, Pittsburgh	27.00	27.50	29.00	30.00
Wire rods, Pittsburgh	37.00	37.00	35.00	35.00

	Feb. 27, 1932	Jan., 1932	Nov., 1931	Feb., 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.50	1.55	1.60	1.65
Steel bars, Chicago	1.60	1.70	1.70	1.70
Steel bars, Philadelphia	1.81	1.81	1.89	1.94
Iron bars, Chicago	1.70	1.60	1.65	1.75
Iron bars, Chicago	1.60	1.55	1.60	1.60
Shapes, Philadelphia	1.60	1.65	1.69½	1.81
Shapes, Chicago	1.60	1.70	1.70	1.70
Tank plates, Pittsburgh	1.50	1.55	1.60	1.65
Tank plates, Philadelphia	1.69½	1.69½	1.73½	1.80½
Tank plates, Chicago	1.60	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.75	1.85	1.90
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.75	2.80	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	2.00	2.00	2.05
†Sheets, No. 24, hot, ann., Chi.	2.35	2.45	2.55	2.50
Sheets, No. 24 galvan., Chi.	3.00	2.95	3.05	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.90	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.25	12.75
Heavy melting steel, eastern Pa.	7.35	7.50	7.95	10.50
Heavy melting steel, Chicago	6.75	7.20	7.65	9.85
No. 1 wrought, eastern Pa.	9.00	9.35	9.50	11.00
No. 1 wrought, Chicago	6.25	7.25	8.00	9.25
Rails for rolling, Chicago	9.50	10.25	10.00	12.10

Sheets

New Prices Await Tonnage Test —Little Forward Interest—Motorcar Requirements Light

SHEET PRICES, PAGE 41

Pittsburgh—Sheet mills are receiving occasional orders at the new prices named recently although the majority of buyers are protected under old orders at former prices. Interest in future requirements is lacking and producers have little occasion to open books for second quarter. Demand from most industries remains at a quiet rate. Orders from the Ford Motor Co. continue as light as formerly, and no improvement is noted in total demand from the automotive industry. Except for mills on which specialties are rolled, producers have only scant backlogs and operations continue irregular, averaging around 25 per cent. Prices now generally are 2.20c, Pittsburgh, for hot-rolled annealed sheets; 2.85c for galvanized; 1.70c for blue annealed; 2.90c for autobody; and 2.40c for tin mill black.

Philadelphia — Sheet prices are steady under light demand. The new price levels are expected to be tested within the next two weeks.

Buffalo—A trend toward more firmness in prices is noted in this district. Buying continues close to consumers' actual requirements.

Youngstown, O.—Lacking stimulus from any direction sheet production shows a tendency to decline, although quotations appear to gain strength, especially on galvanized and autobody. New business is slow. Automotive interests are not doing any better than are the miscellaneous lines, and Ford orders have not expanded. As most consumers are believed to have covered first quarter requirements at former prices, the new quotations are not expected to receive a real test until the middle or latter part of March.

Cleveland—Sheet mills are united in naming the new prices on most grades but so far their efforts to obtain business at these figures have not been fruitful. Apparently, through the determination of one maker who is setting March 31 as the deadline for shipments and specifications under existing contract prices, the movement is heading toward an attempt to increase prices for contract users. One mill interest here is receiving a greater volume of enameling stock orders, though the black sheet trade still is dull. Several autobody contracts have been revised downward in Detroit to important consumers.

Cincinnati—Demand for sheets in this district has tapered slightly, with cautious buying by some important consumers. Demand for road building materials is expected soon, and any improvement in credit conditions will bring heavier buying from the South.

Chicago—The improvement noted a week ago is sustained. Moderating weather in several sections is bringing signs of seasonal activity, particularly in sheet roofing products. Operations are holding at 30 to 35 per cent. Sales of No. 24 hot-rolled annealed have been made at 2.30c, mills, while the mill price for No. 24 galvanized is a flat 2.95c.

St. Louis—Certain manufacturers are purchasing in fair volume, and the movement of galvanized sheets to the South has improved slightly. Prices are unchanged.

Allegheny Supplies Tubing

Washington—Allegheny Steel Co., Brackenridge, Pa., has been awarded 1100 feet of seamless steel tubing for the naval aircraft factory, Philadelphia, on a bid of 18.8c a foot delivered.

George J. Meyer Mfg. Co., Milwaukee, manufacturer of dairy and beverage plant equipment, employing 300, has increased its working hours.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.35c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.90c

GALVANIZED NO. 24

Pittsburgh, base	2.75c to 2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.40c

AUTOMOBILE NO. 20

Pittsburgh, base	2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

*Pittsburgh, base	2.40c to 2.50c
*Gary, base	2.50c to 2.60c
*St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
*Gary, Ind. Harbor, base	2.25c to 2.35c
*Chicago, del.	2.30c to 2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
*Gary, Ind. Harbor, base	2.75c to 2.85c
*Chicago, del.	2.80c to 2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE

Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Long ternes, 24, unassort.,	2.85c to 3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
*Philadelphia, base	1.69½c to 1.79½c
New York, delivered	1.80c
Boston, delivered	1.92c
Chicago, base	1.60c to 1.70c
Cleveland, del.	1.70½c to 1.75½c
Lackawanna, N. Y., base	1.60c to 1.70c
*Birmingham, Ala., base	1.65c to 1.75c
Coatesville, Pa., base	1.60c
Pacific Coast, c.i.f.	1.80c to 1.85c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.50c to 1.60c
*Philadelphia, del.	1.60c to 1.70c
New York, del.	1.77c
Boston, del.	1.90½c
Chicago, base	1.60c to 1.70c
Cleveland, del.	1.70½c to 1.75½c
Lackawanna, N. Y., base	1.60c to 1.70c
*Birmingham, Ala., base	1.65c to 1.75c
Pacific Coast, c.i.f.	2.05c
Do., wide flange	2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.50c to 1.60c
Chicago, base	1.60c to 1.70c
*Birmingham, Ala., base	1.65c to 1.75c
Lackawanna, N. Y., base	1.60c to 1.65c
Pacific Coast, c.i.f.	2.05c
*Cleveland, base	1.65c
*Philadelphia, del.	1.81c to 1.91c
New York, del.	1.85c to 1.95c
Boston, del.	1.97c
Pittsburgh, cold finish	1.65c to 1.75c
Pittsburgh, forg. qual.	1.75c to 1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
*Eastern mills	1.20c to 1.30c
Pittsburgh	1.30c to 1.35c

IRON

*Chicago, base	1.60c to 1.70c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.50c to 1.60c
Chi., billet	1.75c to 2.00c
Chi., rail steel	1.55c to 1.80c
*Chi., rail steel, bridges and culvert	1.55c
*Philadelphia, cut lengths	1.96c to 2.06c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.		
2000	0.25	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10 Cr.	0.45
2300	1.50	51.00 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon Van.	0.95
4100 .15 to .25 Mo.	0.50	9250 (flats)	0.25
		9250 (rds.,sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.50c to 1.55c
Do, 6 1/16 to 24-in., Pitts.	1.40c to 1.45c
Hot strip to 6 in. Chi.	1.60c to 1.65c
Do, 6 1/16 to 24 in.	1.50c to 1.55c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll. strip, Pitts., Cleve.	1.90c to 2.00c
Worcester, 3 tons, over	2.15c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	75 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread 73, 10 and 10 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list 73, 10 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts 73, 10 and 10 off

Tire bolts 60, 10 and 10 off

Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished 73, 10 and 10 off

HEXAGON CAP SCREWS

Milled 80-10-10-5 off

Upset 1 in. diam. and smaller 85-10 off

SQUARE HEAD SET SCREWS

Milled 80-5 off

Upset, 1 in. and smaller 80-10-5 off

Upset, larger than 1 in. 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	2.50c
Do. less carloads, 5 kegs or over	2.75c; less than 5 kegs, 2.90c.
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Bars

Higher Price Not Fully Tested But Brings in Some Nearby Lots —Volume Largely Unchanged

BAR PRICES, PAGE 41

Chicago — Announced plans to withdraw the 1.60c, Chicago, price for bars, plates and shapes for second quarter, in the expectation of establishing 1.70c again as a base, have resulted in moderate gains in short-term sales contracts. Specifications also are above the average since Jan. 1. Most implement works will continue at about 15 per cent, although, beginning this week, tractor production will be largely down. Road machinery builders expect to get into heavier production in March.

Boston—Springfield, Mass., armory opens bids March 7 on 100 tons of hot-rolled manganese steel bars for rifle bars, 1.375-inch diameter in 12-foot lengths.

New York—Commercial steel bar prices are 1.50c to 1.60c, Pittsburgh, with the outside figure expected to come in for a test over the next few weeks. Indications are that producers will endeavor to make this a firm quotation on second quarter business. Meanwhile, volume is unchanged, with cheap foreign offerings having an adverse effect on efforts at stabilization. Common iron bars are moving at 1.55c to 1.60c, Pittsburgh, with some scattered offerings at less where tonnage is especially attractive.

Washington—Bids close March 14 on 104,000 pounds of soft steel bars for Panama, rounds, squares, hexagons and flats in 16 to 20-foot lengths, including 3000 pounds of heat treated 2-inch rounds.

Philadelphia — Commercial steel bars are quoted at 1.81c to 1.91c, delivered, with the higher price subject to test.

Pittsburgh—A test of the 1.60c, Pittsburgh, price announced on steel bars for second quarter and the remainder of this period apparently will not be accomplished until next month since buyers are covered for the time being at old prices and little new business is appearing. Specifications are quiet and unchanged although February business declined slightly from the January volume.

Youngstown, O.—Better prospects for new business in common steel bars is being noted by local mills which are receiving a much larger volume of inquiries, apparently brought out by stiffening of the bar quotation to 1.60c, Pittsburgh. Demand for alloy steel bars is slow to improve, depending as it does largely upon the activity of auto parts-makers.

Cleveland—Effective immediately the local merchant steel bar base has been revised upward $2 a ton to 1.65c, Cleveland. This applies on both local and outside delivered bars. Several outside mills have likewise made announcement of higher prices on bars, Cleveland base. One mill has named 1.70c as its figure for all new tonnage, effective at once. New asking figures supercede the 1.55c figure in effect to this time.

Cold Finished Prices Are Nominal on Small Demand

Cold Finished Prices, Page 41

Cleveland—The base of 2.00c, Cleveland, is applied without difficulty to the small volume of orders in the cold-finished steel bar market today. In fact, this base over the past six months or more has held with relative stability in comparison with the hot-rolled bar figure. Lack of automotive buying is restricting volume in this market.

Pittsburgh—Producers of cold finished steel bars and shafting have made no announcement of second quarter price, following the recent $2 a ton advance on hot bars. Interest in future requirements is lacking and recent specifications also are quiet. Business and shipments are off moderately from the January volume.

Tin Plate Demand Improves Moderately

Tin Plate Prices, Page 41

Pittsburgh—Tin plate specifications have improved moderately and operations are up a few points at nearly 40 per cent. Activity still is seasonally light and little change is noted in the outlook, still affected adversely by the unfavorable position of canners. Less competition from foreign tin plate, which recently resulted in extremely low delivered prices, now is noted. The domestic market continues $4.75, Pittsburgh, per base box.

Plates

Mills Endeavoring to Establish 1.60c, Pittsburgh, for Second Quarter—Rail Shops Buying

PLATE PRICES, PAGE 41

Chicago—Numerous smaller refinery storage projects are being held up for better conditions in the oil industry, and less than 1000 tons in miscellaneous lots of tank work was placed in the past week. Plate mill capacity in this district is less than one-third engaged. Slightly heavier specifications have appeared recently from railroad shops. Mills have indicated they will withdraw the 1.60c quotation for second quarter, but as no announcement for that period has been made the price range remains 1.60c to 1.70c, Chicago. About 200 tons of plates will be purchased by the United States engineer's office at St. Louis for pontoons.

New York—Although lacking substantial tonnage plate business shows a slight improvement. Current prices are 1.60c to 1.70c, Coatesville, Pa., with some sellers expected to fall in line shortly in applying the higher figure immediately.

Pittsburgh — Plate business remains at a low rate, New inquiry for fabricated work consists mainly of government river craft while specifications are light. Plates are quoted 1.60c, Pittsburgh, but forward buying is lacking and a test of the market is deferred.

Philadelphia — Plate prices are 1.60c to 1.70c, Coatesville, Pa., with some producers yet to announce their position as to the application of 1.70c on immediate business. Demand is restricted to small lots.

Cleveland — In naming 1.60c, Pittsburgh, on inquiry for plates for immediate delivery, one mill has lost some business. Apparently the market will rule at 1.50c until sometime in March when contract customers bring up the question of renewal. The local 84-inch plate mill was on last week, but the 112 and 152-inch mills were down.

Contracts Placed

Unstated tonnage, shapes and plates, elevated steel water tank, district training school, Washington; to

Chicago Bridge & Iron Works, Chicago.
Unstated, steel tank and tower, veterans' hospital, St. Petersburg, Fla., to R. D. Cole Mfg. Co., Newman, Ga., $6368.

Contracts Pending

500 tons, plates and shapes, dredge, for United States engineers, Galveston, Tex.; bids closed Feb. 25.
321 tons, navy, Norfolk, Va., and Philadelphia, mainly for former; bids March 8.
200 tons, 20 pontoons for United States engineer, St. Louis; bids March 19.
183 tons, two 45-inch diameter penstocks, Yakima project, Washington; bureau of reclamation, Denver; bids April 4.
150 tons, derrick boat, for United States engineers, Huntington, W. Va., district; bids close March 17.
Unstated, spray boat, United States engineer, New Orleans; McClintic-Marshall Corp., Bethlehem, Pa., low, $12,440.

Firmer Stand Expected On Semifinished Steel

Semifinished Prices, Page 48

Pittsburgh — Semifinished steel buying is too light to provide a thorough test of prices, with quotations generally nominal at $27 for rerolling billets and slabs, $26 for sheet bars and $34 for forging billets. Wire rods continue $27. No prices have been named for second quarter although producers are expected to take a firmer stand on quotations in view of the recent action on prices of finished products. Shipments are quiet and unchanged.

Youngstown, O.—Scattered sales of billets, slabs and sheet bars are made from time to time as consumers' needs develop. There is no steadiness to shipments in many instances. Quotations hold at $27, Youngstown, Cleveland and Pittsburgh, for billets and slabs; and $26, for sheet bars.

Cleveland — Demand for sheet bars, billets and slabs is light, the leading producer here continuing to operate five of its 14 open hearths. Sheet bars are held at $25 to $26, Cleveland and Youngstown, O., and billets and slabs at $27. Though the usual differential for forging billets is $5 higher, this has not been strictly adhered to in some recent business.

Chicago—Semifinished steel shipments have tapered, particularly sheet bars. Prices have been unsteady because of concessions in eastern markets, but billets and blooms, 4 x 4-inch base, are fairly well established at $28, Chicago. Forging billets are $34 and $35, according to grade.

Railroads

Rail and Fastenings Inquiry Expanding—Bookings Not Heavy —16,000 Tons Fastenings Pend

TRACK MATERIAL PRICES, PAGE 41

Chicago—Track fastenings orders are increasing. About 10,000 to 12,000 tons of fastenings have been placed with local mills in the last ten days and it is indicated departments rolling track accessories will step up production shortly. The Erie and Nickel Plate accessory requirements will be 15,000 to 16,000 tons. Chicago, Milwaukee, St. Paul & Pacific, as a part of its 1932 program of $5,500,000 for improvements to property, has authorized purchase of about 16,000 tons of rails and 3000 to 4000 tons of track fastenings. At least a part of the rails will be bought within the next two to three weeks. Rail and track fastenings requirements of that road will amount to about $1,250,000. Several roads are adding air conditioning equipment. Santa Fe is equipping 25 diners at a cost of $200,000, and will include all dining cars on its first class trains. Southern Pacific is air conditioning 14 diners. Pacific Fruit Express may build its contemplated 100 refrigerator cars in its own shops.

New York—Chief interest here is centered in the New York Central's rail requirements, specifications for which are expected out within the next fortnight. While requisitions of the various lines will undoubtedly be pared down, belief is expressed in some quarters that possibly 70,000 to 75,000 tons will be bought.

Panama Canal railroad, 100 car wheels, 33-inch, 700 pounds each, for 40-ton freight cars, bids March 14; 24 cast steel locomotive tender wheels, 33-inch, bids March 11.

Locomotive demand is nil and car buying centers around the Norfolk & Western's award of four cars to its own shops. Republic Steel Corp. is low on 900 tons of tie plates and Oliver Iron & Steel Co. is low on 360 tons of spikes and lag screws for the local board of transportation.

Buffalo—Total bookings of rail producers here to date aggregate only 10,000 tons, an exceptionally small volume for what is usually the buying season. Several other major purchases are said to be pending however, and may bring about an early increase in rail mill operation. These units have operated only a few days out of the last four or five months.

Pittsburgh—No new inquiry from railroads is noted following a slight spurt in activity in track work and cars recently. A fair tonnage of plates and shapes is involved in inquiry of the Wheeling & Lake Erie railroad for gondola cars. Specifications still are light, but February business showed an increase over January.

Cleveland—Closing may be expected momentarily on outstanding inquiries here from the Nickel Plate and Erie railroads for tie plates, spikes and other rail fastenings. The status of the Wheeling & Lake Erie inquiry for from 50 to 100 steel gondolas is unchanged, no award as yet having been made. The latter road opened its Massillon, O., shops late last week, rehiring about 200 men. The shops had been closed since December.

Car Orders Placed

Norfolk & Western, four cars to own shops.

Rail Orders Pending

Chicago, Milwaukee, St. Paul & Pacific, 16,000 tons, of which at least 2000 may be purchased soon; fastenings about 4000 tons.

Expect Ford Inquiry For Iron Ore Soon

Iron Ore Prices, Page 48

Cleveland—An inquiry from the Ford Motor Co. for its 1932 requirements of iron ore is expected almost daily, one having been issued about March 1, the past several years. Last year the inquiry was for 290,000 tons, but the company closed for about 200,000 tons. Less is expected this year, due to the heavier production in 1931 from the Ford mines. No other inquiries have developed.

Receiver for Illingworth

Receivers have been named for the John Illingworth Steel Co., Frankford (Philadelphia), Pa., the proceedings were friendly, and operations are being continued.

Simplified practice standard for standard weight malleable screwed unions has been reaffirmed without change until Feb. 15, 1933.

Structural Shapes

Plain Material Price Advance Nominal as Yet—Eastern Markets at Lowest of Depression—New York Central May Get Aid—Total Awards Lowest of Years

STRUCTURAL SHAPE PRICES, PAGE 41

New York — Structural lettings have slumped to a low point, awards and fresh inquiry being the lightest in years. A few lots have been placed, but private enterprise in the building field is nil as a support to the structural market. Small-lot orders in some directions, however, show a slight gain. While 1.60c, eastern mill, prevails on current business, indications are that the most stringent efforts yet made will be the goal of plain material producers with the opening of the second-quarter when a $2 a ton advance is announced. Bids close March 17 on a postoffice at Hempstead, N. Y. Heaviest tonnage pending in the East is for several projects at Washington.

New York Central has made application to the Reconstruction Finance Corp. for a $7,000,000 loan, which, if granted, will apply against cost of its west side improvement program, now held up, including the St. Johns park terminal with modified plans requiring less steel than first planned.

Boston—Recent flurry in lettings has subsided, being confined to a few small tonnages, although several moderate-sized jobs are pending. One of the largest is the Rindge school at Cambridge, Mass. Plain material prices on ordinary lots for the remainder of the quarter are 1.60c, eastern mill. Fabricated prices are mixed with sharp bargaining for some tonnages.

Philadelphia—Shapes are 1.55c to 1.70c, nearest mill. With most buyers covered for the remainder of the quarter, the outside price is largely nominal at the moment. Featuring awards is 400 tons for the Delaware Power & Light Co.'s Wilmington, Del., office building. Action on the 4000-ton Franklin memorial is imminent.

Pittsburgh—Inquiry and awards are slightly less active, although a fairly large tonnage is involved in prospective government work for which bids are yet to be asked. Operations of larger fabricators are fairly well sustained by backlogs but shape specifications from smaller interests are light. Plain material is nominal at 1.60c, Pittsburgh.

Cleveland—Six Cleveland contractors figured the three western Pennsylvania state bridges which went in Feb. 26. Industrial Rayon Corp. plant here closed the same day. Cleveland postoffice, taking about 11,000 tons, may be active in March as final release is given from Washington. It now develops that the Cleveland Union Terminals will need about 1000 tons of structural for foundation reinforcement for this job. Shapes in the open market, not to contract customers, are 1.60c, Pittsburgh, but without test in actual sales as yet.

Chicago—More bridge work appears in inquiry, and numerous federal projects are pending. Bids were received late last week for 700 tons covering the Davenport, Iowa, and Terre Haute, Ind., postoffices. Plain material is quoted 1.60c to 1.70c, Chicago. A 1000-ton bascule bridge is active in Wisconsin. Shipments of structural material are going ahead on the 48,000 tons for the Chicago postoffice.

Contracts Placed

4100 tons, highway bridge at Seventy-ninth street and Manheim road, Chicago, to McClintic-Marshall Corp., Bethlehem, Pa. Award noted in STEEL, Jan. 4 rejected.

2800 tons, pier 34, New York, to McClintic-Marshall Corp., Bethlehem, Pa., through Babor-Comeau & Co. Inc., contractor.

550 tons, bridgework, Shoals, Ind., to Rochester Bridge Co., Rochester, Ind.

440 tons, postoffice, Youngstown, O., to Truscon Steel Co., Youngstown, O., also 20 tons reinforcing to same interest, through A. W. Kutsche Co., Detroit, contractor. Previously noted to unstated steel supplier.

400 tons, office, Delaware Power & Light Co., Wilmington, Del., to McClintic-Marshall Corp., Bethlehem, Pa.

325 tons, sheet piling, state township job, Mays Landing, N. J., to an eastern mill.

310 tons, New York Academy of Medicine, New York, to Ingalls Iron Works Co., Verona, Pa.; Marc Eidlitz & Son, contractors.

300 tons, 3-story school and auditorium, Church of Blessed Sacrament, Fillmore avenue, Jackson Heights, Queens, N. Y., to American Bridge Co., Pittsburgh; O'Sullivan Harney Inc., contractor.

300 tons, shapes and bars, barracks and dining hall, veterans' hospital, Tuskegee, Ala., to Virginia Bridge & Iron Co., Roanoke, Va., and Kalman Steel Corp., Bethlehem, Pa.; Pittman Construction Co., Atlanta, Ga., contractor.

282 tons, auditorium, University of Texas, Austin, to Austin Brothers, Dallas, Tex.; Landis & Young, Georgetown, Tex., contractors. Harman-Jeps Co., Austin, awarded 72 tons reinforcing bars.

230 tons, repairs, elevated railroad structure, Myrtle avenue, Brooklyn, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

175 tons, addition to pier No. 2, Oakland, Calif., to Moore Drydock Co., Oakland.

170 tons, girder spans, Green Bay, Wis., Chicago, Wabash, St. Paul & Pacific railroad, to McClintic-Marshall Corp., Bethlehem, Pa.

165 tons, high school, Melrose, Mass., to New England Structural Co., Boston.

160 tons, levee bridge, East St. Louis, Ill., to Missouri Bridge & Iron Co., St. Louis.

150 tons, highway bridge, Cook county, Ill., to Midland Structural Steel Co., Chicago.

110 tons, plant addition, Grencie & Ellis Co., Frankfort, Me., to American Bridge Co., Pittsburgh.

105 tons, bridges, Utah, to Kansas City Structural Steel Co., Kansas City, Mo.

100 tons, school, West Middle district, Hartford, Conn., to Lehigh Structural Steel Co., Allentown, Pa., through R. F. Gadd, Hartford.

100 tons, buildings for St. Elizabeth's hospital, Washington, to Wheeling Structural Steel Co., Wheeling, W. Va., W. E. O'Neil Construction Co., Chicago, contractor.

100 tons or more, shapes and bars, school, Whitehouse road, Baltimore, to Baltimore Steel Co., Baltimore, and Concrete Steel Co., New York; Cogswell Contracting Co., contractor.

100 tons, United Artists theatre, Berkeley, Calif., to Herrick Iron Works, Oakland, Calif.

Awards Compared

	Tons
Awards, week ended Feb. 27	**6,732**
Awards, week ended Feb. 20	**12,791**
Awards, week ended Feb. 13	**12,700**
Awards, this week in 1931	**57,705**
Av. weekly awards, 1931....	**34,236**
Av. weekly awards, 1932	**13,630**
Av. weekly awards, Jan.	**16,346**
Total awards to date, 1931	**241,724**
Total awards to date, 1932	**122,670**

Contracts Pending

15,000 tons, postoffice, Detroit; all contractors bids of Feb. 15 rejected. To be readvertised.

3000 tons, pier cylinders, Ford Motor Co. plant, Alexandria, Va., plans revised; to use timber.

1000 tons, bascule bridge span over Fox river, DePere, Wis.; bids March 15.

978 tons, masonry dam with eight gates, Illinois river, near Marseilles, Ill., army engineer, Chicago. Work also requires 43 tons forgings, 42 tons steel castings, 32 tons iron castings, 22 tons steel piling, 11

tons wire fabric; bids go in March 18.
800 tons, postoffice, Terre Haute, Ind.; bids in.
700 tons, Illinois bridges; bids March 9.
440 tons, highway bridges in Fulton and Hancock counties, Illinois.
425 tons, postoffice, Fairbanks, Alaska; Wm. MacDonald Construction Co., St. Louis, low.
400 tons, bridge work for Nebraska highway commission.
400 tons, postoffice, Davenport, Iowa; bids in.
260 tons, state building, Norristown, Pa.
250 tons, highway bridge, Superior, Mont.
200 tons, addition to power house, Minneapolis Street Railway Co., Minneapolis.
200 tons, approximate, I-beams, angles and channels, Panama Canal; schedule 2732, bids March 14; also plates under class 8.
225 tons, bridges at Russell and Norton, Kans.
200 tons, plant, Industrial Rayon Corp., Cleveland; contractor bids as of Feb. 26.
156 tons, two Michigan state highway jobs; 137 tons, Eaton county, McClintic-Marshall Corp., Bethlehem, Pa., low; 19 tons, Livingston county, Lackawanna Steel Construction Co., Buffalo, low.
150 tons, Missouri delinquent home, Springfield, Mo.; Joseph A. Holpuch Co., Chicago, contractor.
150 tons, state bridge, Yorke, Me.
140 tons, bridge over San Antonio creek, Santa Barbara county, Calif.; bids opened.
125 tons, parochial high school, Taunton, Mass.
100 tons or more, nine steel sluice gates and structurals, United States engineer, Milwaukee; bids March 8.
100 tons, Iowa bridges; bids March 1.

Concrete Bars

Week's Orders Run to Small Size—Attempt Higher Mill Length Price—Foreign Steel Evident in Philadelphia Market — Chicago Outlook Improves—Awards Off

REINFORCING BAR PRICES, PAGE 41

New York—Efforts to establish 1.95c, New York, in March on mill lengths, a $2 a ton increase on recent current business, is being made by some distributors. Inquiry is small, although several good jobs are up, but continue delayed. Lettings are also in small lots. About 250 tons for a state job at the Elmira reformatory has been placed.

Boston—Award of a good-sized tonnage of bars for the Melrose high school has been made while several hundred tons are pending for other schools in this section. Demand for roadwork and bridges has slumped. Prices are unchanged, but some shading continues on the more attractive volume.

Philadelphia—Reinforcing steel is soft at 1.40c to 1.50c, Pittsburgh, for mill lengths, with rerolling bars easy at 1.20c, eastern mill. Foreign steel is exerting a depressing influence, a sizable tonnage of German bars being supplied for one job recently placed in this district. About 100 tons in a state building at Norristown, Pa., is pending.

Some sales of foreign reinforcing steel bars figure back to about $1, base Pittsburgh.

Buffalo—Demand for reinforcing bars continues much smaller than is usual at this season. Both sales and inquiries are light.

Pittsburgh — Reinforcing bar prices of less than 1.60c, Pittsburgh, for stock lengths are being withdrawn, accompanying similar action on merchant bars. Business is light while inquiry includes only small lots. Pending tonnage consists mostly of public work.

Cleveland—Fifteen Ohio state highway department projects go in for contractor bid March 4 and a part of this number will take some reinforcing steel, though the tonnage is small individually. Reinforcing bar fabricators have little before them here. A local warehouse closed on 65 tons for a telephone exchange building recently, about the largest job here for some time.

Chicago—Fresh reinforcing bar business is disappointing, but fabricators are figuring on a number of pending projects, including government work. About 750 tons will be let within the next few days for the Missouri delinquent home at Springfield, Mo. A local contractor has placed 350 tons with an eastern bar company for hospital buildings at Washington. A firming tendency is noted in prices of both billet and rail-steel reinforcing bars. An upturn in Chicago building permits is cited since the action of building trades unions in accepting a 20 per cent cut in wage scales, as well as more inquiries for plant and warehouse sites in Chicago from out-of-town manufacturers.

Birmingham, Ala.—Demand gives indication of improvement shortly. Connors Steel Co. has its works down temporarily, but is adding to its orders, several recent bookings being from the government.

Awards Compared

	Tons
Awards, week ended Feb. 27	2,320
Awards, week ended Feb. 20	4,401
Awards, week ended Feb. 13	7,120
Awards, this week, 1931	3,055
Av. weekly awards, 1931	6,808
Av. weekly awards, 1932	5,431
Av. weekly awards, Jan	7,144
Total awards to date, 1931	57,657
Total awards to date, 1932	48,874

Contracts Placed

380 tons, barracks, Sunnyvale, Calif., dirigible base to unnamed interest; Robert McKee, Los Angeles, contractor.
350 tons, high school, Melrose, Mass., to Joseph T. Ryerson & Son Inc., Chicago.
350 tons, building for St. Elizabeth's hospital, Washington, to Buffalo Steel Co., Tonawanda, N. Y., through W. E. O'Neil Construction Co., Chicago, contractor.
350 tons, wharf and railroad trestle, Oahu, T. H., to unnamed interest; Newport Contracting & Engineering Co., Lee Hall, Va., contractor.
250 tons, postoffice, Long Beach, Calif., to unnamed interest.
250 tons, cell blocks, boy's reformatory, Elmira, N. Y., to Concrete Steel Co., New York; L. Levine, New York, contractor.
190 tons, library, Columbia university, New York, to Empire Steel Products Co., New York, through Marc Eidlitz.
100 tons, San Gabriel dam No. 2, Los Angeles county, California, to unnamed interest.
100 tons, teacher's college library, Fresno, Calif., to unnamed interest.

Contracts Pending

750 tons, state delinquent hospital, Springfield, Mo.; Joseph A. Holpuch Co., Chicago, contractor.
650 tons, postoffice, Newark, N. J.
300 tons, state hospital, Brooklyn, N. Y.
300 tons, wharf and trestle, Pearl Harbor, T. H.; Newport Contracting & Engineering Co., Lee Hall, Va., contractor.
250 tons, police stations, Boston.
150 tons, sanitorium, Alta Loma, Calif., for Upland Sanitorium Co.; plans being prepared.
104 tons, bars and shapes, three bridges, Grayson county, Virginia; bids March 1.
100 tons, building for San Francisco Women's college, San Francisco; bids opened.
100 tons, North Carolina, for Raleigh, N. C., also 3200 feet, 2-inch, wrought-iron pipe and 30 tons, 18 gage, galvanized sheets; bids in.
100 tons, state building, Norristown, Pa.

Pipe

Municipal Work Promises Heavier Demand in Spring—Line Projects in Formative Stage

PIPE PRICES, PAGE 52

New York—Bids are in on several thousand tons of cast pipe, including 2000 tons for Hawthorne, N. Y. About 550 tons for a boys' school at Warwick, N. Y., was divided between two foundries. New inquiry is sluggish and prices are easier. Bayonne, N. J., will purchase a small tonnage of 42-inch steel pipe. Reading Iron Co. booked several cars of wrought pipe for the Brooklyn state hospital and close to 100 tons of steel pipe will be bought for the heating system. Fifty bids on manhole castings, 51 tons, for the war department, brought out a low of about $16 a ton.

Boston—Municipal inquiry for cast pipe is below normal with indications economy programs will keep down purchases. Utilities have bids on several hundred tons. Prices are easy, even small lots going at concessions. Bids have been submitted on about 1500 tons of 60-inch steel pipe for Newton, Mass.

Philadelphia — The Atlantic Oil Producing Co., here, has awarded 185 tons of casing to Jones & Laughlin Steel Corp.

Buffalo—Rochester, N. Y., is considering a major program for water pipe extensions, and other nearby communities may be in the market shortly. Several oil and gas companies have substantial projects pending for the spring which promise to develop a good demand for pipe. Delivery has begun on 8000 tons of cast iron pipe for Buffalo.

Pittsburgh — Orders for tubular products are unimproved. Hopes for better demand over the next two months are based on expectations of more active building operations and development of proposed line pipe projects. Line pipe inquiry so far is quiet. Jobbers' stocks of standard pipe remain at a low level. Demand for tubes and tubing is quiet and unchanged. Pipe mill operations are 20 to 25 per cent.

Chicago—Several small municipal cast pressure pipe projects are being figured. About 1000 tons still is pending at Cincinnati. Utility companies in the Chicago area bought about 200 tons in the last few days.

Birmingham, Ala.—Pipe specifications are a little more encouraging, and makers expect a larger demand in the spring than last year. Municipal and corporation inquiries are quiet.

Cast Pipe Placed

2750 tons, 6 to 12-inch class 150 pipe, Long Beach, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

Steel Pipe Placed

2000 tons, 36 and 42-inch, water department, Minneapolis, to East Jersey Pipe Co., New York.

Unstated tonnage, 1125 boiler tubes, Memphis, Tenn., engineer, to Crane Co., Chicago, $3113 f.o.b. Pittsburgh. For Pittsburgh, 1280 feet seamless boiler tubes, to A. B. Murray Co. Inc., Brooklyn, N. Y., $3.68 per tube.

Cast Pipe Pending

3000 tons, 6 and 12-inch, Tulsa, Okla.

1350 tons, 6 and 8-inch class 150, San Francisco; United States Pipe & Foundry Co., Burlington, N. J., low.

1000 tons, 4 and 6-inch, Phillipines; bids March 4.

600 tons, 36 and 48-inch, Albany, N. Y.; Warren Pipe & Foundry Co., Phillipsburg, N. J., low.

125 tons, 12-inch pipe, improvement of Kenyon street, Seattle, Pacific States Cast Iron Pipe Co., Provo, Utah, low.

Steel Pipe Pending

1000 tons, 10¾-inch steel pipe, foundation work, stadium, Jersey City, N. J.

Unstated tonnage, 72,000 feet, up to 4-inch wrought iron or galvanized steel, standard, including 20,000 feet, 2-inch, and 20,000 feet, ½-inch, Panama; bids March 14, schedule 2732.

Unstated, 7000 feet, welded, black and galvanized, mainly 2-inch, navy, Philadelphia; 6200 feet, 2-inch, galvanized Hampton Roads, Va.; 3600 feet, including 2300 feet, 3-inch, standard, and 1300 feet, ¾-inch, black, extra strong, Mare Island, Calif., bids March 8.

Wire Makes Little Gain As Season Advances

Wire Prices, Page 41

Chicago—Spring demand is opening up on a modified scale in some merchant wire products, while manufacturers' wire continues slow. Sales of nails are disappointing. The price of 2.25c, Chicago or western mills, for plain wire appears well established. Jobbers in the southerly markets have been doing more business, due to the advanced season. Improvement is noted chiefly in exclusively seasonal products. Wire products for oil field equipment are slow. Reduction of 20 per cent in building trade wages in Chicago is expected to stimulate building, but immediate results are not expected.

Worcester, Mass.—Wire production continues to show slight gain but inquiry is heavier, automobile demand leading the way.

New York—Although seasonal improvement has failed to materialize, sellers of nails and wire products appear confident that buying will increase in March. Prices are fairly steady at $1.95, Pittsburgh, on nails and 2.20c, Pittsburgh, on plain bright wire.

The leading interest has reaffirmed prices on nails and wire products for the second quarter.

Philadelphia—Although seasonal improvement is delayed prices of wire and nails are steady in anticipation of the usual spring revival.

Buffalo—Demand for wire products is showing seasonal improvement augmented by a pickup in some industrial business in which the season is not a major factor.

Pittsburgh—Specifications for wire products show little change. Jobbers' stocks are only moderately large and some additional buying is looked for with the approach of spring. Activity in plain wire and wire rods is unimproved from the rate a month ago. Prices are well observed on new business, with nails continuing $1.95 in carload lots, plain wire 2.20c and wire rods $37.

Cleveland—Unfavorable rural situation continues to prove a burden to wire mills in forecasting improvement in volume. The credit situation in outlying country points is in most cases the chief drawback to sales of fencing and other wire products. Nails at $1.95 a keg to jobbers are nominal, as are other prices in view of light buying.

Offer Belfont March 30

Belfont Steel & Wire Co. properties at Ironton, O., including two blast furnaces having a combined annual capacity of 168,000 tons, and finishing capacity rated at 50,000 tons of plain wire, 7500 tons of galvanized wire, 10,500 tons of barbed wire and 600,000 kegs of wire nails annually, will be offered at public sale at Ironton, O., March 30 under bond holding foreclosure proceedings. Receivers were named Nov. 25, 1929. In 1924 the Belfont company absorbed the Kelly Nail & Iron Co., also of Ironton.

Strip

Cold-Rolled Marked Up $2 for Second Quarter in East—Hot Rolled Prices Reaffirmed

STRIP PRICES, PAGE 41

Philadelphia — Strip sellers are opening books for second quarter at 1.40c and 1.50c, Pittsburgh, on hot-rolled wide and narrow strip, respectively, and at 2.00c, Pittsburgh, on cold-rolled. This action is reaffirmation in the first instance and an advance of $2 per ton over the prevailing minimum in the latter. This is made effective immediately on new accounts.

Pittsburgh—Strip producers defer opening of second quarter books and prices for that period remain to be announced. The recent market has been steady at 1.50c to 1.55c and 1.40c to 1.45c for hot strip, with cold strip generally 1.90c to 2.00c. Second quarter inquiry so far is lacking. Specifications continue at about the January rate, although shipments have declined, reflecting the reduction in automotive operations over the past 30 days. Strip production continues at 20 to 25 per cent.

Youngstown, O. — Specifications for both hot and cold-rolled strip are much restricted. This has the result this week of slowing mill operations somewhat. Instead of usual tonnage releases mill orders ranged from 2500 pounds to 25 tons, the latter being the upper limit. Quotations, while irregular, also indicate more tendency toward strengthening. Books are being opened for second quarter delivery at unchanged prices.

Cleveland—One large strip interest has named 1.40c and 1.50c, Pittsburgh, as absolute minimum for second quarter, with $1 up for the odd-tonnage buyer. Another mill selling here is attempting to get 1.45c and 1.55c, Pittsburgh, for second quarter on attractive accounts. Less official is an anticipated move to make 2.00c, Cleveland, the trading level for cold-rolled strip for second quarter, but the market on the latter is far from stable at present, light character of inquiry having its disturbing effect. Otis Steel Co.'s hot-rolled strip mill is out of production this week.

Chicago—Hot-rolled strip mills are booking a fair day-to-day miscellaneous business, but have little automotive work at hand. Production of hot-rolled strip mills is 25 to 30 per cent, and cold-rolled about 20. Wide hot strip is 1.50c to 1.55c, Chicago, while narrower sizes are 1.60c to 1.65c. Producers state they will name an advance of $1 for second quarter.

Operations Stem Loss; Hold at 25 Per Cent

Youngstown, O.—District steel production averaged 25 per cent last week, off 12 points from the week before. Ingot output was expected to recover some of this loss this week, during which a 28 per cent level may be reached. Wider fluctuations mark ingot production, which was higher at last week's close than at its opening. Fifteen of 68 open hearths are melting, against last week's low of 13 and 24 the prior week. Automobile steel buying has been extremely light. A Warren, O., open-hearth plant may resume shortly after a week's shutdown.

Operations, week of Feb. 27....	**25**
Operations, week of Feb. 20....	**25**
Operations, week of Feb. 13....	**27**
Operations, this week, 1931.....	**53**
High for 1932, Feb. 6	**28.5**
Low for 1932, Jan. 2	**22**

Pittsburgh—Operating rates generally are steady. Ingot production holds around 23 per cent, with little change in early prospect. Blast furnace schedules remain at 9 active steelworks stacks out of 54. Sheet production is unchanged at 25 per cent, but tin plate output is up slightly at 40. Pipe and strip continue 20 to 25.

Philadelphia—Steelmaking operations in the East were unchanged last week at about 17 per cent, and no change is indicated for the current week.

Buffalo—Operations in the Buffalo district have held at 35 per cent for the past ten days, following only a three day letdown to 24 per cent. Thirteen open hearths have been operating during the ten-day period. It is likely that about nine will run this week although last minute changes in schedules may increase this number slightly.

Cleveland—Steel production was up three points last week over the preceding week. Last week's rate was 38 per cent and represented 13 active open hearths. Five of seven 60-ton furnaces are on at American Steel & Wire Co., a gain of one; three 125-ton open hearths at Otis Steel Co., and five 100-ton units at Corrigan, McKinney Steel Co.

Chicago—Indications are that ingot production in this district will be stepped up soon, due chiefly to heavier demand for track fastenings. Production last week was barely 24 per cent, and schedules this week indicate a shade under 25. Nine of the district's 36 steelworks blast furnaces are active. Illinois Steel Co. has five of its 27 stacks in blast, while Inland Steel Co. has two of its four furnaces active at Indiana Harbor. Wisconsin Steel Co. and Youngstown Sheet & Tube Co. each has one active furnace.

Birmingham, Ala.—While one or two open-hearth furnaces are taken off or put on from time to time, estimate of steel operations here based on ingot production still is around 53 per cent. Some doubt is expressed as to continuation of this rate.

Warehouse Trade Dull; Differentials Cause Stir

Warehouse Prices, Page 52

Philadelphia — Sheet jobbers are voicing protest over the system of quantity differentials recently announced by one producer. They assert the plan provides inadequate compensation for jobbers and reflects the disposition of the mill to obtain a greater volume of less-than-carload business. Indications that other mills might follow are causing particular agitation. Belief is expressed in some quarters that the plan possibly has been misinterpreted. General warehouse business is light.

New York—For the first time in weeks some jobbers note a slight increase in volume. While improvement is slight and well distributed, there has been a spotty gain in small orders. Prices, especially for sheets, are mixed, and cold-finished products are steadiest.

Pittsburgh—Sales from stock still lack improvement over January. Prices are unchanged, with no revisions in immediate prospect following advances in mill quotations.

Detroit—A slowing-down has been evidenced in the past week or two and the February total probably will fall below January.

Chicago—February sales of warehouse products fell slightly under January, as buying against low inventories early in January furnished a substantial lead to January business.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.50
Pittsburgh, dist. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Valley furnace	15.50
Cleveland fur., local del.	16.00
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	15.50 to 16.00
Cleveland fur., local del.	16.00
Pittsburgh dis. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.50
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.50 to 16.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	16.00
Pittsburgh, delivered	16.63 to 17.13
Pittsburgh, furnace	16.00

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.50
Pittsburgh district fur.	15.50
Pittsburgh, delivered	16.13 to 16.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.32
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$11.00
Chrome ore, 48% gross ton c.i.f.	$18.00 to 19.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50% (nom.)	24 cents
Brazilian, 46-48% (nom.)	20 to 21 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	32.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00 to 34.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00
Youngstown	25.00 to 26.00
Cleveland	25.00 to 26.00
Chicago	27.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molyte, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

Improved Tone in Market, with Shipments Increasing—Larger Demand Expected in March

PIG IRON PRICES, PAGE 48

Pittsburgh—Pig iron orders and inquiry continue light. Activity in February showed little change from that of January. Foundry requirements are unimproved, although consumption in production of ingot molds during February was the best in several months. Orders usually are for single carloads. The market is nominally unchanged at $16, Pittsburgh, for No. 2 foundry, bessemer and malleable, with basic $15.

Boston—Pig iron sales are limited to a few scattered carloads and truck deliveries from the local furnace and from stocks of Dutch iron at Providence. Foundry operations continue light. Prices are untested, but generally unchanged.

New York—Sales here in the past week totaled 6000 to 7000 tons, including at least two lots of more than 1000 tons for delivery in Pennsylvania. More iron appears under consideration. Buffalo and eastern Pennsylvania prices are holding at $14.50 to $15, furnace, with the lower figure nearer the going market. Southern iron is moving in small lots at $10, furnace.

Foster-Wheeler Corp., Carteret, N. J., has closed for 200 tons of iron, including 150 tons of malleable.

Philadelphia—The market is devoid of tonnage inquiries or sales. Prices are unchanged, with No. 2 foundry generally $14.50 to $15, eastern Pennsylvania furnace.

Buffalo — Demand for pig iron turned sharply for the better during the last half of February, both sales and shipments showing substantial gains over averages for the past ten weeks. Prices also have tended toward firmness in eastern territory. By operating the five active stacks in the district on full blast production has been increased considerably without addition of new units.

Youngstown, O.—Sales and shipments are intermittent, depending upon individual melter's needs. Republic Steel Corp. has just banked a stack at Youngstown. Bessemer iron is bringing $15.75 to $16, valley; basic is nominally $15; No. 2 foundry and malleable are $15.50 to $16; and gray forge and No. 3 foundry, $15.50.

Cleveland—Pig iron producers look for a reversal of the usual order, and better demand in the second quarter than in the first, basing expectations on seasonal improvements and expansion in automotive output. For one merchant furnace interest the daily average of shipments for February were about 20 per cent ahead of those in January, which were the largest since last July. Another furnace company's shipments to the sixteenth of this month were larger than those for all of January. The current month's sales, however, will be less than last month's. For the past week they did not exceed 5000 tons for all furnace interests with headquarters in Cleveland. Inquiries are a little better, but still restricted to small, prompt lots. The Cleveland market is dull, the price holding at $16, base, furnace. For shipment into competitive districts, $15, base, furnace, generally is minimum.

Cincinnati—Important melters in this district have closed contracts for first quarter requirements. Orders in the past week totaled about 1000 tons. Shipments continue steady.

Chicago—Shipments of silvery and alloy iron for automotive account are not increasing, despite the fact a western automobile plant is out with new models. Moderate increases in the melt are noted among a few foundries, particularly in Indiana and Wisconsin. Despite variable prices for merchant iron west of here and in southern Illinois, quotations appear steadier in the Chicago-Milwaukee area, partly because credit conditions often govern individual sales and prices quoted. February shipments were 10 to 12 per cent over January.

St. Louis—The volume of inquiry for second quarter has increased, and the tone of the market is more cheerful, though sales still are light. A moderate improvement in the melt is noted. Malleable foundries specializing in automotive castings report a slight gain. Prices are steady.

Birmingham, Ala.—The market is dull, with purchases limited to small lots. Seven blast furnaces continue in operation. Prices hold at $10, base, furnace, for northern delivery, and $11 for local shipment.

Toronto, Ont.—Melters continue to buy small lots for prompt delivery, sales in the past week aggregating 500 tons. Few inquiries are being issued. Prices are steady.

Ferroalloy Shipments Are Slowing Up

Ferroalloy Prices, Page 48

Chicago — Ferroalloys shipments declined sharply late in February, following brisk shipments early in the month to replenish stocks. Prices are steady. About 500 tons of low phosphorus iron is on inquiry in north central Illinois.

New York—Demand for ferroalloys is slow, although some fair orders have been booked. The status of steelmaking operations has been an important factor. All ferroalloy prices are unchanged.

Pittsburgh—Ferroalloys continue to move slowly, showing practically no change from the volume of a month ago. Ferromanganese is $75 on small lots, with spiegeleisen $27 on lots up to 100 tons. Spot sales are light. Ferrotungsten business reflects quietness in automotive operations. The price holds around $1 to $1.10 a pound.

Bolt, Nut Price Advanced For Second Quarter

Bolts, Nuts, Rivets Prices, Page 41

Pittsburgh—Producers of bolts and nuts have announced an advance of about 12 per cent in prices, effective immediately and to be applied on second quarter contracts, through introduction of a discount of 75 per cent off list, compared with the recent market of 73, 10 and 10 off. Rivet prices are unchanged at 2.25c, Pittsburgh and Cleveland, for structural rivets and 70, 10 and 5 off for small rivets. Specifications are fairly steady.

Cleveland—Important makers of bolts and nuts have withdrawn the former 73, 10 and 10 discount and have substituted a discount of 75 off list, thereby increasing their sale price in keeping with the recent advance in their raw material.

Chicago—Talk of higher second quarter prices for bolts and nuts has developed because of the withdrawal of prices by an eastern producer. While the discount here nominally is 73, 10 and 10 off, concessions have been frequent. Buyers show little interest in future commitments. Despite tapering of specifications late this month, February orders were over January.

New York—Effective immediately, leading sellers have announced an increase in bolts and nuts to 75 off list. Rivets are unchanged at 2.25c, Pittsburgh. Operations are under 25 per cent of capacity.

Scrap

Little Change in Face of Dull Demand—Chicago Feels Scarcity—Shipments Are Held Back

Chicago—Scrap receipts from industrial and railroad sources have reached the lowest point in two years. Even with the slow shipments to leading melters of steelmaking grades, the obvious dealer shortage in supplies of some grades is having a firming tendency. A further sale of secondary heavy melting steel has been made at $7, but the range continues at $6.75 to $7.25. Dealers have been buying at $7 to fill shipping requirements. The Burlington railroad sold part of a 4000-ton list late last week. More strength is shown in factory hydraulic compressed sheets, sales having been made above $6.

Boston—Scrap shipments are light. Little material has been bought for outside, although $4 has been offered

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	4.00 to 4.50
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	6.75 to 7.25
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 7.75
N. Y. deal. R. R.	4.50 to 5.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	7.00 to 7.50
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	10.00

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	6.00 to 6.50
Cleveland	7.00 to 7.25
Detroit, dealers	5.75 to 6.25
E. Pa. new mat.	6.50 to 7.50
Pittsburgh	9.75 to 10.00
Valleys	9.50 to 10.00

BUNDLED SHEETS

Buffalo	5.25 to 5.50
Cinci., deal.	6.00 to 6.50
Cleveland	6.00 to 6.50
Eastern Pa.	5.50 to 6.00
Pittsburgh	8.50 to 9.00
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.75
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.50 to 11.00
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	8.50 to 9.00
Chicago (2 ft.)	9.50 to 10.00
Cinci., deal.	10.50 to 11.00
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.25 to 8.75
Chicago, net	5.75 to 6.25
Cinci., deal. net	4.50 to 5.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.50 to 5.00
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	9.75 to 10.25
Chicago	8.00 to 8.50
Eastern Pa.	8.50 to 9.50
Pittsburgh	11.00 to 11.50
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.50 to 8.00
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	6.75 to 7.25
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	6.75 to 7.25
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	6.50 to 7.00
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	5.00 to 5.50
Buffalo, No. 2	8.00
Chicago, No. 1	6.25 to 6.70
Chicago, No. 2	6.75 to 7.25
Cinci., No. 2	6.50 to 7.00
Eastern Pa.	9.00
N. Y., No. 1, deal.	6.00 to 6.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.50 to 9.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.25 to 5.75
Cinn., No. 1 dl.	4.75 to 5.25
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	4.50 to 5.00
St. L., No. 1	5.00 to 6.50
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	4.00 to 4.50
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.25
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit	3.25 to 3.75
Eastern Pa.	4.00 to 4.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	7.50 to 8.00
St. Louis	2.50 to 3.00
Valleys	7.25 to 7.75

BORINGS AND TURNINGS For Blast Furnace Use

Boston, dealers	1.25 to 1.50
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	4.00 to 4.50
Boston, chem.	5.50 to 6.50
Boston, deal.	1.05 to 1.55
Buffalo	5.75 to 6.25
Chicago	4.25 to 4.75
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.50 to 7.00
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	5.25 to 5.75
Chicago, net	5.50 to 6.00
Cincinnati	4.75 to 5.25
Eastern Pa.	7.00
N. Y., deal.	5.00 to 5.50
St. Louis	5.75 to 6.25

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, deal.	1.50 to 2.00
Chicago	9.50 to 10.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	6.50 to 7.00
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.75 to 7.25
Chi., steelworks	5.75 to 6.25
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh, O. H.	8.75 to 9.25
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 11.50
Buffalo	12.00 to 12.50
Chicago	11.75 to 12.30
Eastern Pa.	14.50 to 15.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	7.30 to 7.85
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.50 to 9.00
Boston, iron	11.00 to 12.00
Buffalo, iron	9.25 to 9.75
Buffalo, steel	9.75 to 10.25
Chicago, iron	7.00 to 7.50
Chi., rolled steel	8.50 to 9.00
Cincinnati, iron	9.00 to 9.50
E. Pa. steel	8.50 to 9.00
E. Pa. iron	10.00 to 11.00
Pitts. iron	10.00 to 10.50
Pitts., steel	11.00 to 11.50
St. Louis, iron	7.00 to 7.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	8.00 to 9.00
Buffalo (Mach.)	9.50 to 10.00
Buffalo, cupola	8.50 to 9.00
Boston, textile	7.00 to 8.50
Chicago, mach.	8.90 to 9.50
Chi., railroad	7.55 to 8.10
Chicago, agri.	7.00 to 7.55
Cinn., mach. cup.	10.00 to 10.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	10.00 to 11.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston	6.00 to 6.50
Bost. mach. cast	8.00 to 9.00
Buffalo, break	8.00 to 8.50
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00
N. Y. break, dl.	5.75 to 6.00
N. Y. No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.50 to 9.00
Buffalo	9.50 to 10.00
Chicago, agri.	6.50 to 7.00
Chicago, R. R.	6.75 to 7.25
Cinci., R. R. del.	8.75 to 9.25
Cinci., agri. del.	8.50 to 9.00
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING 5 feet and over

Birmingham	9.25 to 10.00
Boston, deal.	6.00 to 7.00
Buffalo	8.50 to 9.00
Chicago	9.50 to 10.00
Eastern Pa.	10.00 to 10.50
New York	6.25 to 6.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.50 to 10.00
Buffalo	10.00 to 11.00
Eastern Pa.	11.00
Pittsburgh	11.00 to 11.50

for heavy breakable cast and $3.75 for mixed. Other grades, including chemical borings, turnings and stove plate, are none too steady.

New York—Buying is light and shipments are held up by several eastern mills. While the Philipsburg foundry has bought some No. 1 cast at around $9, pipe foundries are not taking much material. Little No. 1 steel is moving out of this territory, although some is being purchased for barge at unchanged prices.

Philadelphia—Scrap prices are unchanged and nominal for the third consecutive week. Trading is featureless and suspensions are still effective at important consuming points.

Buffalo—Scrap buying has diminished after some minor purchases and is practically at a standstill. No. 1 heavy melting steel has not begun to move since Jan. 1 and only limited quantities of No. 2 steel and other materials have been accepted at principal consuming plants. Prices have again relapsed into a nominal stage, and yard operations to an exceptionally low point. Receipts are very light.

Pittsburgh — The scrap market lacks mill purchases, while the outlook for renewed buying is obscured by uncertainty over the future rate of steelmaking. Recent orders include only small lots, leaving prices nominally unchanged. with shipments against orders still at a restricted rate. The March list of the Pennsylvania railroad involves 20,920 net tons, including only 1200 tons of No. 1 heavy melting steel and 3000 tons of rails. Cast iron wheels offered involve 5280 tons.

Cleveland—Melting of steel and iron scrap shows no increase and prices are unchanged. Valley consumers are limiting shipments to Warren and Youngstown, while smaller shipments are being made to Sharon, Pa. Because of scarcity in material to apply on orders prices have advanced locally on several grades.

Detroit—A weaker tendency was evident in the market last week when compared with the previous week. Prices, however, are without quotable change, with little in prospect to justify higher levels. February scrap offerings will reflect slower automobile manufacturing.

Cincinnati — Important consumers of iron and steel scrap, although withholding embargoes, are accepting only light shipments. Prices remain unchanged in a market which presents no adequate test.

St. Louis—Trading in iron and steel continues moderate, with prices unchanged. Shipments of blast furnace material have been fairly steady, but no new buying has appeared. Bundled sheets are slow, and there is little demand for cast and malleable grades.

Birmingham, Ala. — Demand for iron and steel scrap is slow. Slight readjustments in quotations make no change in the general list. As with pig iron, melters refrain from looking ahead.

Toronto, Ont.—General conditions in iron and steel scrap are dull. Steel scrap is at a standstill and current demand runs almost entirely to a few special iron grades. Machinery cast and wrought scrap have a fair call in single car lots, while stove plate, malleable scrap and other lines are spotty to dull. Dealers are out of the market and have made no change in prices.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Head Scrap Chapters

New presidents of chapters of the Institute of Scrap Iron and Steel Inc. include W. J. Ross, of the Hyman-Michaels Co., at Chicago; Lee J. Workum, of the L. J. Workum Co., Portsmouth, O., at Cincinnati; Ben P. Williams, of Hickman, Williams & Co., at St. Louis; and Darwin S. Luntz, of the Luntz Iron & Steel Co., Canton, O., of the Cleveland-Detroit chapter.

Vice presidents at Chicago are Walter Bregman, I. Cohen and John T. McEnroe; at St. Louis, J. Foster, Gus Gillerman and D. M. Cohen; at Cincinnati, William Wolf; and of the Cleveland-Detroit group Myron A. Cohen and Sam Kasle.

Benjamin Schwartz, New York, is director general of the institute.

Johnson Metal Products Co., Erie, Pa., is operating five days a week with a good backlog of unfilled orders.

Coke

Little Change Noted in Market —S o m e Western Foundries Close for Second Quarter

COKE PRICES, PAGE 48

Pittsburgh — Demand for all grades of beehive coke is quiet. The market for furnace coke is almost entirely lacking in new business, with the $2.25 price largely nominal. Foundry requirements are unchanged while prices continue $3.25 to $4.50. Consumption of domestic heating coke, although still light, is more active than a month ago.

New York—A small improvement is noted in metallurgical coke specifications. This, however, has had little bearing on prices, with beehive furnace coke $2 a ton, Connellsville. Standard grades of beehive foundry coke are $3.25, Connellsville, with some going at $3. Premium brands of beehive foundry coke are $4.50, Latrobe, Pa. By-product foundry coke is $8.76 to $9.16, delivered, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati — By-product foundry coke was in better demand during February than in January, shipments indicating a slight but sustained improvement in the melt. New business was light.

St. Louis—Orders for metallurgical coke continue small. Some contracting for second quarter by western foundries is noted, but the majority of consumers deal in the open market as requirements arise. Domestic coke consumption this winter has been at a lower level than at any time in the memory of dealers here.

Birmingham, Ala.—Coke sales are light. The by-product foundry grade is firm at $4.50, ovens.

Export shipments of iron ore from Bilboa, Spain, in November, were 56,800 tons, nearly 15,000 tons above October shipments. Of this total 48,000 tons went to Great Britain and 8700 tons to the Netherlands.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.		Blk.	Gal.	Blk.	Gal.
⅛		58	44½	25	7
¼		62	50½	30	13
⅜—⅝		64	52½	33	17
¾—2				37	20

LAP WELD

2	57	45½	25	11
2½—6	61	49½	2½—3½	30 15
7—8	58	45½	4—6	32 19
9—10	56	43½	7—8	31 18
11—12	55	42½	9—12	28 13

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+11 +46
¾	60	49½	½	25 9
1—1½	62	51½	¾	30 14
2—3	63	52½	1—2	36 20

LAP WELD

Extra strong, plain ends

2	55	44½	2	31 15
2½—4	59	48½	2½—4	36 22
4½—6	58	47½	4½—6	35 21
7—8	54	41½	7—8	33 19
9—10	47	34½	9—12	23 10
11—12	46	33½		

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 41.40 to 43.40
Six to 24-inch, Chicago..... 38.40 to 40.40
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.50c
Los Ang. lcl.	2.80c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	2.50c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.95c
N. Y.	3.00c
Portland	3.50c
Phila.*† (e)	2.90c
Pitts.**	3.00c to 3.10c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.50c
San. Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.25c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.25c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.

(c) Plus mill, size and quantity extras.

(d) Minus quant. diff.

(e) New mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

Sheets	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, to jobbers	6.75
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.75
Seamless copper	14.87½
Rods	
Yellow brass (high, full turnings)	10.25
Naval brass	11.37½
Anodes	
Copper untrimmed	12.25
Wire	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.50 to 3.75
Chicago	2.75 to 3.00
Cleveland	3.00 to 3.25
St. Louis	3.00
Heavy Yellow Brass	
New York	2.50 to 2.75
Heavy Copper and Wire	
New York	4.25 to 4.50
Boston	4.50 to 4.75
Chicago	3.00 to 3.25
Cleveland	3.25 to 3.75
St. Louis	3.25
Composition Brass Borings	
New York	3.25 to 3.50
Yellow Brass Tubing	
Cleveland	1.50 to 2.00
Light Copper	
New York	3.50 to 3.75
Chicago	2.50 to 2.75
St. Louis	2.75 to 3.25
St. Louis	3.00
Light Brass	
Boston	1.65 to 1.85
Chicago	1.50 to 1.75
Cleveland	1.25 to 1.50
St. Louis	1.75
Lead	
St. Louis	2.25
Zinc	
New York	1.00 to 1.12½
Cleveland	1.00 to 1.12½
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	7.50 to 9.00
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	4.00 to 4.75
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt, aluminum No. 12	8.50 to 9.00
Brass ingots, 85-5-5-5	6.25

Metals

Copper Falls to Record Low of 6.00c, Connecticut—Lead Prices Cut—Tin Also Eases

New York—Demand for all nonferrous metals was less active last week. Copper, lead, zinc and tin prices moved lower but aluminum and antimony quotations remained fairly steady.

Copper—Electrolytic copper eased to 6.00c, Connecticut, late in the week, thus equaling the record low figure reached earlier this month. Continued lack of demand from both domestic and foreign consumers forced custom smelters to lower their prices. Mine producers generally were out of the market or quoted the nominal price of 6.50c, Connecticut. The export price on copper was cut Friday to 6.12½c, c.i.f. European ports, but this failed to stimulate much interest from abroad. Copper products and brass products containing 80 per cent or more of copper were cut ½-cent. Other brass products were reduced ⅜-cent. Brass ingot and scrap also weakened.

Tin—Demand for tin was slight and prices tended downward. Straits metal generally was quoted under actual importers' costs. Ninety-nine per cent metal was practically nominal.

Lead—Prices were cut 25 points last week. Buying was in smaller volume. Leading interests quoted 3.30c, East St. Louis, and 3.50c, New York.

Zinc—Sales were extremely restricted with some sellers remaining entirely out of the market. The general level of prices showed little change but a slightly easier tendency was noted late in the week when metal was available at 2.80c, East St. Louis.

Antimony—Some sellers asked 6.75c, duty paid, but sufficient metal was avavilable at 6.37½c to satisfy the extremely dull demand.

Aluminum—Buying continued at the recent slow pace but prices remained unchanged.

Silver—A new high for 1932 of 31.00c an ounce was reached during the week but the metal later eased off from this level.

Coke By-Products Firm Though Demand Is Light

New York—While demand for coke by-products is light, prices generally are firm due to small output. Sales of benzol and xylol are routine. Toluol shows a slight gain, with lacquer interests taking limited supplies. The drug trade is taking a fair volume of phenol. Naphthalene activity is confined to shipments against contracts. Sulphate of ammonia buying is spotty, with prices irregular.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver Stronger

New York—Quicksilver prices are stronger, with the going market $67.50 to $69, a virgin flask of 76 pounds. Continued curtailment of production in the West has contributed to a firmer tone. Demand is slow, but a few orders were booked in the past week at prices included in the prevailing range. It is reported some contracts for round lots might be had at $67 a virgin flask.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
February 20	6.25	6.62½	6.00	22.30	22.75	3.75	3.55	2.82½	22.90	6.37½	35.00
February 22—Holiday											
February 23	6.25	6.62½	6.00	22.20	22.70	3.75	3.55	2.82½	22.90	6.37½	35.00
February 24	6.12½	6.37½	6.00	22.15	22.65	3.75	3.55	2.82½	22.90	6.37½	35.00
February 25	6.00	6.37½	5.75	22.12½	22.60	3.75	3.52½	2.82½	22.90	6.37½	35.00
February 26	6.00	6.37½	5.75	22.10	22.45	3.50	3.30	2.80	22.90	6.37½	35.00

Machinery

FEBRUARY comes to a close as another month of stagnant sales in plant equipment markets. Hope still is held however, that introduction of the new Ford cars in the near future will give sufficient impetus to the automobile business to cause release of at least some items on large equipment schedules which long have been pending. It may be significant that rather than go to a five-day week, an upstate New York refrigerator manufacturer is adding men on a four-day schedule to meet increased production demands. Much used machinery is being offered at this time, and is competing with sales of new equipment in a number of instances.

New York—Manufacturing activity shows spotty improvement in some lines, reflecting a somewhat better sentiment in the machine tool and equipment fields. Inquiries are slightly better but there is no general or pronounced improvement. Most ball bearing plants in southern New England are on a 32-hour week basis, with a few departments on a 40-hour schedule. In some instances however, larger working forces are being employed. An up-state refrigerator builder is rushed to keep within a four-day schedule and is adding men rather than to go on a five-day week.

Buying of equipment continues to be light. The navy has bids on a list of tools for various yards, having closed on them Feb. 23. This list includes four turret lathes for Mare Island on which Jones & Lamson Machine Co. was low; two other turret lathes for the same point on which Kemp Machinery Co. was low; a rotary shear for Portsmouth, a wire testing machine for New York, and a planer for Norfolk. Another small list for the navy closes March 15.

Worcester — The metalworking equipment market continues to be stagnant. As a matter of fact, it has been further depressed by noticeable falling off in inquiry during the past week, a condition which has affected practically all lines.

Lathes, drilling machines and grinders, which constitute the backbone of machine tool production in Worcester, momentarily at least are in little or no demand. Navy department is the only recent purchaser of lathes and even navy schedules are closing slowly.

A company in Grand Rapids, Mich., this week released to a Worcester builder an order for one milling machine. This order has been pending for some time, awaiting the convenience of this buyer.

Naturally, keen local interest has been aroused by the co-operative engineering arrangement between the Cincinnati Milling Machine Co. and its subsidiary, Cincinnati Grinders Inc., Cincinnati, and Heald Machine Co., Worcester, Mass. Details of this plan appear elsewhere on this page.

Pittsburgh—Machine tool and other plant equipment sellers see practically no change in the market. Orders continue quiet both in volume and number. Inquiry also holds at its recent quiet rate.

Pending work offers little encouragement for improved buying under present conditions although better sales are expected to accompany an upturn in general business. Pending work as well as new inquiry generally is made up of individual tools.

Cleveland—There is little or no improvement in demand for machine tools and industrial equipment, with the possible exception of small tools and repair parts. New equipment is up against rather heavy competition of used equipment. Not only are machinery houses working to liquidate heavy stocks but also the Hupp Motor Car Co. has put on the market a large list of excess machine tools.

Despite lack of buying activity in the new machinery market, interest in new designs on the part of prospects is keen. A private demonstration of a new design held last week at the plant of a local builder, drew attendance of nearly 100 engineers and production men.

Announcement is made that Monarch Machine Tool Co., Sidney, O., has been awarded two 20-inch lathes for Wright Field, on a bid of $3205.61. A cone-head, precision bench lathe on the same list went to E. A. Kinsey, Cincinnati, at $1454. Interest is being shown here on two 155-foot aluminum alloy and steel dragline booms on which the U. S. engineer corps office, Memphis, Tenn., closes bids March 1.

Chicago—Poor prospects for the spring season and continued lack of definite projects on which to figure, are disconcerting to dealers in machine tools and other industrial equipment in this district. Most houses are completing February with only a shade more volume than was shown in the preceding month. No large machinery sales were made in the last week but small tools and parts were fairly active. Scattered inquiries appear for used tools.

The past year has seen no substantial orders from western carriers and apparently no inquiries now are in the making. Expectations are that the two leading western automotive builders may have some orders to place within the next few months. Usual spring equipment business from farm implement and tractor companies is not likely to materialize this year.

Engineering Co-Operation Is Announced

Cincinnati Milling Machine Co. and its subsidiary, Cincinnati Grinders Inc., Cincinnati, and the Heald Machine Co., Worcester, Mass., have concluded a co-operative arrangement which will be mutually advantageous in the further development of their respective lines of manufacture.

These companies have for a long period of years made many valuable contributions to the industries they serve and they believe that by making the engineering research and grinding knowledge of each company available to engineers of the others, a more complete service in internal and external grinding can be rendered to all users.

Electric Crane Institute Reports on January

New York — While shipments slumped sharply, new orders increased in January as compared with the previous month, according to Electric Overhead Crane institute. Unfilled orders on Feb. 1 also were heavier than on Jan. 1.

Shipments during January totaled eight units, tonnage capacity 134¼, valued at $40,319. This compares rather unfavorably with 26 units shipped in December with a tonnage capacity of 367½, valued at $137,948.

New orders included 18 units, tonnage capacity 138¼ valued at $65,179 compared with 17 units, tonnage capacity 206¾, valued at $70,487 the previous month.

Unfilled orders on Feb. 1 included 32 units, tonnage capacity 807, valued at $382,761. On Jan. 1 unfilled bookings totaled 26 units, tonnage capacity 843¼, valued at $372,139.

Pacific Coast

Prospects Improve, Some Gain in Buying Is Seen and Inquiry Is Better—Alaskan Projects Promise Tonnages—Pipe Slow as Financing Meets Difficulties —Prices Show No Change

San Francisco—(*By Air Mail*)—Some improvement in demand for iron and steel products is evident and sales of reinforcing bars and cast iron pipe are the largest for any week this year. Weather conditions have delayed a number of projects. Unnamed interests have taken 380 tons of reinforcing bars for barracks at the dirigible base at Sunnyvale, Calif., 350 tons for a wharf and railroad trestle at Oahu, T. I., and 100 tons for San Gabriel dam No. 2, Los Angeles county, Calif. Inquiry includes 150 tons for a sanitorium near Alta Loma, Calif., and 100 tons for a building for the Women's college at San Francisco.

Pittsburgh-Des Moines Steel Co., Pittsburgh, has taken 100 tons for a tank and tower for the Sunnyvale dirigible base and Huber Mfg. Co., Los Angeles, booked 100 tons for a tank and tower for the veterans' hospital at Palo Alto, Calif. Bids have been opened on 350 tons for a penstock at Los Angeles.

Moore Drydock Co. has booked 175 tons for an addition to pier No. 2, Oakland, Calif., and Herrick Iron Works 100 tons for a theater at Berkeley, Calif.

United States Pipe & Foundry Co., Burlington, N. J., has taken 2750 tons of 6 to 12-inch pipe for Long Beach, Calif., and is low bidder on 1350 tons for San Francisco.

Prices are unchanged and not severely tested. Prices on bars from stock are based on 1.90c for carload lots in the Los Angeles district and 2.60c, base, in the San Francisco district. Plates are 1.80c to 1.85c, c.i.f. Plain structural shapes continue at 2.05c for standard material and 2.15c for wide flange.

Alaskan Tonnages Pending

Seattle—Little activity is shown but approach of spring is giving a better feeling as some projects are held back until better weather. Increased freight rates on steel products, effective from Atlantic ports March 1, give the market a firmer tone and jobbers are adding the new rates to mill prices.

William McDonald Construction Co., St. Louis, is low bidder on the proposed $450,000 postoffice at Fairbanks, Alaska, for which 300 tons of reinforcing bars will be required. Freight from here will be $60 per ton on this steel. Dougan-Hammond Construction Co., Portland, Oreg., is low at $71,840 for the veterans' administration building at Portland. Bids for a veterans' home at Roseburg, Oreg., will be opened March 22. A postoffice building to cost $450,000 is under consideration for Ketchikan, Alaska, and will require a tonnage of reinforcing steel.

Washington and Oregon highway commissions will receive bids before March 15 on fully $1,000,000 worth of roadbuilding work. A bridge over the Clackamas river in Oregon will cost about $300,000, requiring about 1000 tons of steel, bids March 3. A state bridge at Bellingham, Wash., will require about 400 tons of reinforcing bars.

Plate demand is small. Bids for an irrigation pipe line at Wenatchee, Wash., 100 tons, are under consideration.

Pipe inquiry is disappointing, cities finding difficulty in financing their requirements.

British Steel Trade Dull; Pig Iron Stocks Grow

London—(*By Radio*)—Following shutdown of its steelworks, Barrow Hematite Steel Co. Ltd., Barrow-in-Furness, has damped down two blast furnace stacks. Stocks of pig iron are accumulating in all districts except Middlesbrough. The steel trade is almost lifeless. Galvanized sheets are improving, with fairly good orders from New Zealand consumers. Makers of tin plate are negotiating revival of the former selling pool. Continental exports of steel are dull and Western European producers are competing strongly within their own markets.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Feb. 25

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	L s d
Foundry, 2.50-3.00 Silicon	$10.21	2 18 6	$ 9.72 to $10.21	2 0 0 to 2 2 0
Basic bessemer	9.77	2 16 0*	9.48 to 9.72	1 19 0 to 2 0 0
Hematite, Phos. .03-.05	11.34	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$18.76	5 7 6	$11.42 to $11.66	2 7 0 to 2 8 0
Wire rods, No. 5 gage	29.67	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$28.79	8 5 0	$28.55	5 17 6
Merchant bars	1.09c	7 0 0	.57c	2 12 0
Structural shapes	1.21c	7 15 0	.55c to .56c	2 10 0 to 2 11 0
Plates, †¼ in. or 5 mm.	1.37c	8 15 0	.67c to .69c	3 1 0 to 3 2 0
Sheets, black, 24 gage or 0.5 mm.	1.37c	8 15 0	1.46c to 1.49c	6 12 6 to 6 15 0
Sheets, gal., 24 gage, corr.	1.48c	9 10 0	1.54c	7 0 0
Bands and strips	1.48c	9 10 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.33c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.72c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.72c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.53	0 14 6	$3.20	0 13 2‡

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.21	2 18 6	$ 9.46	240	$10.32	370	$16.42	69
Basic bessemer pig iron	9.77	2 16 0*	.....	.....	8.93	320	17.97	75.50
Furnace coke	2.31	0 13 3	5.08	129	4.46	160	5.09	21.40
Billets	18.76	5 7 6	13.00	330	12.00	430	23.68	99.50
Standard rails	1.29c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.09c	7 0 0	.90c	500	.65c	500	1.24c	115
Structural shapes	1.37c	8 15 0	.99c	550	.64c	495	1.22c	112.50
Plates, †¼-in. or 5 mm.	1.40c	9 0 0	1.17c	650	.77c	590	1.43c	132
Sheets, black, 24 ga. or .05 mm.	1.37c	8 15 0§	1.30c	720‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.44c	9 5 0	2.43c	1,350	2.20c	1,690	4.00c	370
Plain wire	1.33c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.48c	9 10 0	.96c	535	.91c	700	1.44c	133

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

Here and There in Industry

(*Concluded from Page* 17)

dletown, O., is moving its Cleveland office from 1516 Keith building to 1528 Keith building.

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Pittsburgh Bridge & Iron Works has moved its main offices from the Fulton building, Pittsburgh, to its plant at Rochester, Pa.

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John T. McEnroe Co., 310 South Michigan avenue, Chicago, has been formed by John T. McEnroe, formerly vice president of the Industrial Steel & Supply Co. It will deal in industrial and railroad steel and iron scrap and industrial and railroad supplies.

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Petersen Tool & Machine Co., Cudahy, Wis., has been incorporated to succeed the partnership of Henry G. Petersen and associates for the manufacture of tools, dies, jigs, fixtures and special machinery at 613 Armour avenue, Cudahy.

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Davis & Thompson Co., 6619 West Mitchell street, Milwaukee, has booked an order for about $100,000 worth of specially designed milling machines for an automobile manufacturer. The company specializes in high production milling units.

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H. A. Brassert & Co., Chicago, have taken an order from the Ford Motor Co. for an automatic electric mud gun for its Henry blast furnace. Pittsburgh Piping & Equipment Co. has placed an order with the Brassert company for a Douglas pipe cutting machine.

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Metalcraft Corp., St. Louis, has leased additional space at 4204 North Union boulevard for a warehouse and repair department and will buy additional machinery and equipment for modernization of the entire plant. S. C. McCluney is president. Its product is toys and metal specialties.

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S. O. S. Co. and its subsidiary, Eagle Steel Wool Co., 3500 South Morgan street, Chicago, will occupy a 1-story manufacturing plant and warehouse, containing 50,000 square feet, at 6201-27 West Sixty-fifth street, constructed by the Clearing Industrial district, Chicago.

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Portable Machinery Co. of Illinois, subsidiary of A. B. Farquhar Co., York, Pa., has has been organized at Chicago and is occupying a building at 4444 Elston avenue for an assembly and stock parts plant for the company's freight handling conveyors. R. F. Tomlinson, vice president, has been placed in charge of the Illinois company.

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Gardner Denver Co. of Canada Ltd., subsidiary of the Gardner Denver Co., Quincy, Ill., manufacturer of mining and industrial machinery, a selling and distributing branch at Toronto, will begin shortly production of several types of its equipment for sale in Canada.

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White Cap Co., 1369 North Branch street, Chicago, metal caps, has signed a 15-year lease, with option to purchase, on a 2-story manufacturing plant at 1806-18 North Central avenue, in the Keeney Industrial district, Chicago, having outgrown its present plant. The structure will be 120 x 160 feet, with provisions for later additions. Investment in land and building is $125,000.

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General Electric Co., Schenectady, N. Y., has added a distribution department to take charge of the finished stock of all products exclusive of the incandescent lamp, electric refrigeration, merchandise and plastic departments. The new division will be headed by J. V. Anthony, formerly connected with the San Francisco office, assisted by Hancock Griffin, former supervisor of district stocks and warehouse.

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International-Stacey Corp., including the Roots-Connersville-Wilbraham division, the International Derrick & Equipment Co., Stacey Brothers Gas Construction Co. and Stacey Mfg. Co., has moved its Fort Worth offices to room 307 Southland Life Insurance building, Dallas, Tex. F. W. Mohler, midcontinent sales manager, and C. B. Coldwell, sales engineer for the Stacey and Roots-Connersville-Wilbraham divisions, and S. B. Creamer, sales engineer, International Derrick & Equipment Co., will be located in the Dallas office.

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Surface Combustion Corp., Toledo, O., has contracted to install two continuous walking-beam furnaces for heating packs and pairs in the tin mills of the Jones & Laughlin Steel Corp. at Aliquippa, Pa. They will be over and under fired with coke oven gas. They are equipped with three conveyors in each, driven independently by power from a common pump through a specially developed hydraulic system. The company also has a contract for another walking-beam type pack furnace for the Tennessee Coal, Iron & Railroad Co. at Birmingham, Ala., the tenth of its kind for this company. Youngstown Sheet & Tube Co., Youngstown, O., has contracted with the company for a walking-beam type tin plate normalizing furnace for its Indiana Harbor works, 6 x 60 feet, fired with low-pressure coke oven gas.

Obituaries

(*Concluded from Page* 15)

of special automatic machinery for various industrial purposes.

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Vernon C. Suckow, 57, widely known engineer and president of the Seattle Engineers' club, died at Seattle, Feb. 12.

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John D. Edwards, sales manager of the Warren City Tank & Boiler Co., Warren, O., died at Warren, Feb. 22.

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Robert Ichter, 59, foreman for 30 years for the Vulcan Iron Works, Wilkes-Barre, Pa., died at Newton, Pa., Feb. 24.

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John H. Schaumleffel, 73, one of the founders of the Marion Gray Iron Foundry, Marion, Ind., died recently. He settled in Marion 38 years ago, and with M. F. Gartland founded the foundry which was later absorbed by the Atlas Foundry Co., Marion.

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John Pugh Jr., 51, for many years general superintendent of tractor activities of the J. I. Case Co., Racine, Wis., died Feb. 22. He was widely known for his work in designing and producing steam tractors and later gasoline and oil tractors.

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William H. Cole, 80, formerly traveling representative for the Raymond Mfg. Co., Corry, Pa., manufacturer of wire springs, died at his home in Corry, Feb. 16. Mr. Cole became associated with the Raymond company in 1910, previously having been identified with Tower & Lyon, New York.

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John O. Horning, vice president and treasurer of the Mesta Machine Co., whose name appearing in an obituary notice in STEEL for Feb. 22, was inadvertently misspelled, died Feb. 13 at Rochester, Minn. A resident of the Pittsburgh district practically all of his life, Mr. Horning was also a director of the Mesta Machine Co., with which he had been affiliated for 40 years.

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John Goodrich Osborne, 53, vice president of the Lakeside Malleable Castings Co., Racine, Wis., died Feb. 24. He was the son of the late William H. Osborne, who in 1870 established the Wisconsin Malleable Iron Co., Milwaukee, which discontinued business several years ago following a fire. Later he established the Lakeside company in Racine, which took over the Milwaukee concern's business upon its retirement.

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New England

PITTSFIELD, MASS.—Pittsfield Auto Body Works, 14 Gordon street, plans construction of a 2-story repair shop to cost about $40,000.

New York

NEW YORK—Howard Utilities has been incorporated with 200 shares no par value to manufacture oil burners, by Slaff & Sass, 1501 Broadway.

NEW YORK—Ridg-Steel Gypsum Partition Corp. has been incorporated with $30,000 capital and 100 shares no par value, by Weschler & Kohn, 70 West Fortieth street, New York.

NEW YORK—Rotter & Son have been incorporated with $5000 capital to conduct a die-cutting business, by G. M. Gottesfeld, 573 Claremont Parkway, Bronx, New York.

NEW YORK—Solar Mfg. Corp. has been incorporated with $30,000 capital and 300 shares no par value to manufacture electrical machinery, by Schecter, Lotsch & Sulzberger, 500 Fifth avenue.

New Jersey

GUTTENBERG—Elevator Engineering Co. Inc. has been incorporated with 1000 shares no par value to manufacture elevator supplies, by Thomas J. Kenney, 586 Newark avenue, Jersey City, N. J.

IRVINGTON—New Jersey Vending Corp. has been incorporated with 100 shares common stock to manufacture vending machines, by Samuel B. Goldstein, 11 Hill street, Newark, N. J.

JERSEY CITY—Norton-Latham Co. Inc. has been incorporated with 100 shares no par value to manufacture sheet metal products, by Daniel D. Loeb, 75 Montgomery street, Jersey City, N. J.

NEWARK—Superior Air Products Co., 182 Malvern street, is having plans drawn for a 1-story addition to its plant to cost $40,000, for the manufacture of pavement breakers, drills and riveters.

Pennsylvania

DU BOIS—DuBois National Castings Co. has been incorporated with $5000 capital to manufacture metal castings, by P. C. Ake, DuBois, Pa.

FRANKLIN—Venango Mfg. Co., Liberty avenue and First street, a subsidiary of the Franklin Railway Supply Co., 60 East Forty-second street, New York, is taking bids for a 1-story automobile manufacturing and assembly plant, 260 x 300 feet and 200 x 260 feet, on Liberty avenue. Cost estimated at $750,000. Milton Hefferman, First avenue and Liberty street, is engineer.

PHILADELPHIA — Central Machine Works Inc. has been incorporated with $10,000 capital to manufacture machinery and parts, by Francis A. Schaef, 323 East Meehan street, Philadelphia.

PHILADELPHIA—Willard Screw & Machine Works has been incorporated with $7500 capital to manufacture bolts, nuts, screws and similar products, by Frederick Rhodes, 3321 H street, Philadelphia.

PHILADELPHIA — Philadelphia Range Boiler & Tank Co. has been incorporated with $55,000 capital to manufacture boilers, tanks and other steel and metal riveted and welded containers, by Ira L. Couch, Mill road, Elkins Park, Pa.

Michigan

DETROIT—C. & W. Wire Container Co. has been incorporated with 100 shares no par value to manufacture wire dispensing containers, by J. W. Cook, 906 Detroit Savings Bank building, and associates.

Illinois

CHICAGO—Industrial Metal Products Corp., 1533 Altgeld avenue, has been incorporated with $20,000 capital and 4000 shares no par value to deal in iron and steel, by Maurice A. Barnett and associates.

Southern States

ATHENS, TENN.—Athens Stove Works is constructing an addition, 125 x 200 feet, to cost about $20,000. Nicholson Construction Co., 102 West Clinch avenue, Knoxville, Tenn., is contractor.

Texas

DALLAS—Dawn Motors Ltd., Los Angeles, has established Texas headquarters here, Charles F. Logan, care chamber of commerce, representative. A plant to manufacture airplane motors is projected for Dallas.

Wisconsin

JANESVILLE—Bowman Dairy Co., Chicago, has had plans made by Frank B. Gray, Aurora, Ill., for remodeling a powdered milk plant here.

MANITOWOC—Bids will close March 2 on construction of a 1 and 2-story headquarters building, 75 x 300 feet, for the county highway department, including a complete machine shop department. Smith & Brandt, Manitowoc, are architects.

MILWAUKEE — Lamp-Time Corp. has been incorporated to manufacture a combination electric table lamp and electric clock. Jesse C. Bradley Jr. is president, Arthur H. Bower vice president and Edward V. Ranft secretary-treasurer. Offices are at 176 West Wisconsin avenue and plant at 2618 North Fourth street.

PALMYRA—Palmyra Mfg. Co. has been incorporated to manufacture machinery, with $9000 capital, by W. R. Norris, W. R. Clark and J. J. Slasek, Palmyra, Wis.

Dominion of Canada

VANCOUVER, B. C.—Pressure Pipe Co. of Canada Ltd. has obtained a site of seven acres on which it plans to build a pipe-manufacturing plant to cost $75,000. Company is controlled by Canada Iron Foundries Ltd. and Consolidated Pipe Co., Montreal, Que., has $500,000 capital. First production will be pipe for the First Narrows tunnel, a large type.

HAMILTON, ONT.—United-Carr Fastener Co. has bought the fastener and grommet division of the St. Lawrence Steel & Wire Co., Gananoque, Ont., and will take the machinery to Hamilton. Outside electric light socket cases will also be added to its line of products.

TORONTO, ONT.—Coin Controlled Products Ltd. has been incorporated with 10,000 shares no par value to manufacture coin-operated devices, by William James Beaton, Toronto, Ont.

New Trade Publications

ELECTRICAL EQUIPMENT—Esterline-Angus Co., Indianapolis, in Bulletin 1031 treats on the use of contact-making instruments for a wide variety of purposes in industrial plants; in Bulletin 1229 the use of graphic instruments in continuous plant surveys is discussed after study of methods and practices of a large number of users of this company's instruments.

TRACTORS—Caterpillar Tractor Co., Peoria, Ill., has issued a circular, largely of halftones, showing dozens of uses to which its tractors have been put and suggesting that many more places probably exist where this power unit can be utilized economically.

TURBINE MIXER—Blaw-Knox Co., Pittsburgh, in Bulletin No. 1326, describes the use of its turbine mixer for mixing, washing, blending, emulsifying and many other purposes. Comparisons are made with other types of mixers. Illustrations, charts and tables supplement the text.

WELDING — Lincoln Electric Co., Cleveland, has added Plate No. 31 to its studies in structural arc welding, treating of arc-welded mill buildings, with various drawings to show methods of rod bracing; in its series of bulletins on elements of design it has issued application sheet No. 27, series 2, on bosses, bearings and their supports. Diagrams show methods used in their construction.

MAGNETIC SEPARATORS—Magnetic Mfg. Co., Milwaukee, in Bulletin No. 10 describes its type K induction magnetic separators, with illustrations, description and specifications of various sizes.